TRADE PUBLICATIONS.

AMERICA

Naval architects and engineers should include in their files a copy of the new and finely illustrated catalogue No. 10-A, giving a description of the new Seabury safety watertube boilers for both stationary and marine service. This book describes the boilers in detail as to construction and operation. A large number of illustrations show stationary installations as well as vessels of navy, commercial and pleasure types, in which Seabury motive power has been installed. These boilers are built by the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., of Morris Heights, New York City.

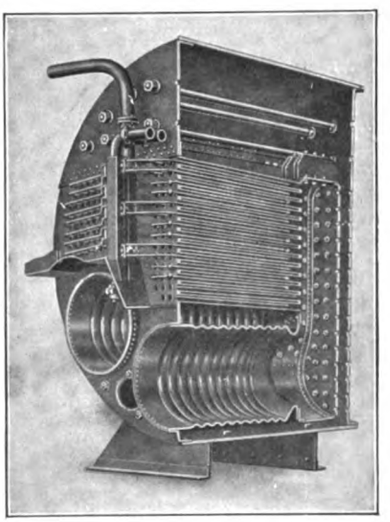
The Coen double-tip burner is described in Bulletin C just published by the Coen Company, 112 Market street, San Francisco, Cal. "There is a crying need for a flexible mechanical oil burner. By flexible we mean a burner that can produce an operating fire or a pilot fire at the will of the fireman, and change from one fire to the other instantly without extinguishing the flame, altering the oil pressure or impairing the quality of the flame. The common method of taking care of a fluctuating load by cutting burners out and then relighting them is crude; it is slow, is injurious to the furnace and increases the opportunities for furnace explosions and flare backs. If you have ever been in the fire-room of an oil-burning steamer when the ship was maneuvering in a fog, making a landing or operating under any conditions where a full head of steam was necessary, and bells for different speeds ahead or astern were sounding in the engine room, you have seen firemen running up and down in front of the boilers with lighted torches in their hands, now cutting out burners, now relighting them. Sometimes they don't light readily—the burner tip has carbonized during its temporary shut down—it has to be changed for a clean burner. Sometimes the fireman considers that the furnace is hot enough to ignite the burner without a torch, and he opens the burner; if he has guessed wrongly he is liable to experience a flare-back with disastrous results. All of these difficulties are overcome by the use of the Coen double-tip mechanical burner. With this burner the fireman has at his immediate command, not only means for regulating the size of his operating fire, but means whereby he can instantly substitute a pilot light or stand-by fire and vice versa, with one quick turn of the burner valve wheel."

"Why Load Your Ship to Her Marks by Guess Work?" is the question asked in the front of the new catalogue just issued by The McNab Company, Bridgeport, Conn. This catalogue is devoted to an illustrated description of the McNab improved draft gage, and the "Foreword" reads as follows: "Among the few articles of manufacture that have survived the changes wrought by the last hundred years—the method of trimming and loading a ship to her marks—has come down to us less changed than other. With one conspicuous exception—The "McNab" Improved Draft Gage—there are no better methods to-day of trimming and loading a ship than in the old days. You know that the principal earnings of a cargoed ship depend entirely upon the amount she carries. Your failure to heed this means financial loss in these ways: In many waterways the draft of ships is subject to critical government inspection, any excess of the prescribed limit subjects the owner to a heavy fine, while just one hard rub of the ship's bottom often results in dry docking, with its attendant expense and loss of earnings. Again, failure to load to a certain limit means an enormous loss in cargo revenue. Many ships must load in the open, where a considerable amount of seaway is encountered. Under these conditions loading with any degree of accuracy is out of the question. A ship, in order to make a safe and economical trip, must be in proper trim. This requires the utmost care and skill, which is seldom acquired with the present methods of loading. How are a ship's marks read at the present time? The officer in charge is forced to be dependent upon the accuracy of a subordinate, who must go over to the side to read the marks at stem and stern. You'll agree that this is very crude and inaccurate. The present era has literally changed the face of the world. What a few years ago was considered phenomenal, is to-day unnoticed, or else forgotten. Science has superseded theory—knowledge has taken the place of belief. In all lines of manufacture an evolution has occurred. Intricate and clumsy machinery has given place to swift and simple appliances. Many methods and materials have been entirely discarded. The economy of the world to-day demands that which consumes the least space, time and material. The old methods of reading a ship's marks are an inheritance from the past—inaccurate—inconvenient. With the best of conditions when reading, an error of 1 inch is usual, an error of 3 to 4 inches is common. A difference of an inch, according to the size of the, makes a loss in cargo earnings of from 50 tons! Think of that!"

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

SEND FOR OUR CATALOGUE [A]

LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
PEOPLES GAS BLDG., CHICAGO

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Dixon's boiler graphite, described by the Joseph Dixon Crucible Company, Jersey City, N. J., in booklet No. 75, is stated by the manufacturer "to reduce fuel consumption, prevent the hardening of scale, give to the surface of the boilers a smooth polish, prevent pitting and make the removal of scale easy by a gentle, mechanical action."

"Ships' Ventilators" is the title of a circular issued by the Sub-Target Gun Company, 381 Congress street, Boston, Mass. "The usual type of ship ventilators are the 'spoon' and 'mushroom.' In the 'spoon' type the air is caught and forced by the movement of the vessel or the velocity of the wind into the interior spaces which are to be ventilated. Where the "mushroom' type is used the air is sucked in. Under certain conditions all the types of ventilators in common use are ineffective to prevent the admission of spray, rain or seas. Accordingly, various means are adopted for closing off the air duct. These comprise unshipping the ventilator stack, covering the opening with plates, etc. Under these circumstances, spaces designed to be supplied with fresh air are often practically sealed for long periods, and until the conditions below decks become intolerable, and such that only those who experience them can best describe them. In order to shorten the period when the ventilated spaces must be sealed, there is an inclination to defer closing off ventilators until such time as to make the storm-swept weather deck a most dangerous place to which to send seamen to unship stacks and fit covers or hatches. These operations have often been attended with casualties and the loss of fittings which leave openings, endangering the safety of the vessel. In order to provide something of a remedy, covers are sometimes fitted to the duct inside the vessel. Such covers are wet and troublesome, dripping water while in place and deluging the room when opened. They also tend to change the direction and otherwise reduce the air efficiency. The improved draft controlling ventilator catches the air and forces it into the ventilated space. Self-draining is a form of ventilator duct cover which is always ready for instant use. Can remain open until the last moment of necessity. Can be opened as soon as weather stress abates or as it appears to abate. Can be instantly operated from within the vessel. Forms no effective obstruction to air currents, as when open it stands in a vertical plane. Whenever open is perfectly dry, shedding water into drain above the deck line. Provides an effective catch for air with ventilator stack removed. A watertight cover for the opening if the stack is carried away. Can be made in composition or other metals and fitted to old work as well as new."

Marine refrigeration is entered into with much detail in a number of circulars published by the Brunswick Refrigeration Company, 130 Jersey avenue, New Brunswick, N. J. "The proper preservation of the ships's stores is an item which, in the past, has not received anything like the consideration due this most important subject, although it is now being realized more and more that is economical to supply the crew as well as the passengers with fresh food at all time. The cooling of refrigerators with ice aboard ship always has been and always will be an item of very great inconvenience and expense, which the steward's department and the shipowner both wish might be much reduced. The cost of the ice alone is especially high in tropical countries, as is also the cost of labor in getting the ice from the dock into the refrigerator on board the ship, to say nothing of the loss by melting. In a refrigerator cooled by melting ice there are always dampness and unsanitary conditions to contend with. The meat stored becomes slimy, necessitating trimming, which item alone has been found to amount, in the case of a coast steamer of 7,000 tons displacement, to between $1,300 and $1,400 in one year. The deterioration of the ice-box, due to the abuse in filling, necessitates frequent repairs. The varying and uncertain temperatures produced by melting ice cause the goods stored to become unfit for use in a short time. A marine type refrigerating plant will cut the cost of refrigeration to practically nothing, the steam required amounting to but little, and the cost of oil, ammonia and repairs amounting to still less. The dry, sweet, pure air, and the uniform low pressure necessary for the proper preservation of foodstuffs, can be obtained in no other way than by the installation of a refrigerating plant. The Brunswick Refrigerating Company, 130 Jersey avenue, New Brunswick, N. J., has for a number of years made a specialty of marine refrigeration in all its branches. At this writing over two hundred vessels have been equipped with Brunswick plants. Any vessel from a tugboat or yacht to a large passenger-carrying steamer can be equipped with a Brunswick refrigerating plant for ship's stores or cargo storage. The initial cost is not great, and the average plant can be installed in a very few days' time without interfering with the movements of the vessel."

Starrett
Speed Indicator

For taking speed tests on engines, generators, turbines, motors, line shafting, or any machinery this indicator is the simplest, most accurate instrument made. It is especially valuable in taking speeds when computing engine horse power, etc. It indicates highest speed without heating. Parts are enclosed like a watch. Made in three styles—prices $1.00, $1.50 and $3.00.

Send for free catalog No. 20L to make your selections.
Buy Starrett tools at any good hardware store.

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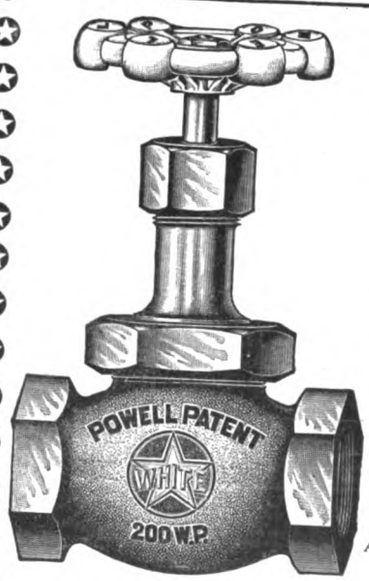
The L·S·Starrett Co·Athol·Mass·
World's Greatest Toolmakers
New York London Chicago

POWELL VALVES
(Especially The "White Star" Valve)



We Manufacture a Complete Line of
GLOBE VALVES
ANGLE VALVES
CROSS VALVES
GATE VALVES
and
CHECK VALVES

Ask your dealer for "Powell" Valves--or write us.

ESTABLISHED IN 1846

THE WM POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES
CINCINNATI, O.

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SCALE?

If you have had scale trouble in your boilers and didn't get relief by using boiler graphite—it is a pretty safe bet that it wasn't **Dixon's Boiler Graphite** you used.

If you have scale troubles and have never tried boiler graphite, start **now** and start **right**—use Dixon's—**The Pioneer** Boiler Graphite.

Reasons? Plenty of them—in Booklet No. 75, on "Graphite For the Boiler," sent for a postal.

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

ROBERT H. WAGER, Manufacturer of the

Wager Patent Improved Bridge Wall

For Furnaces, Marine and Stationary Boilers

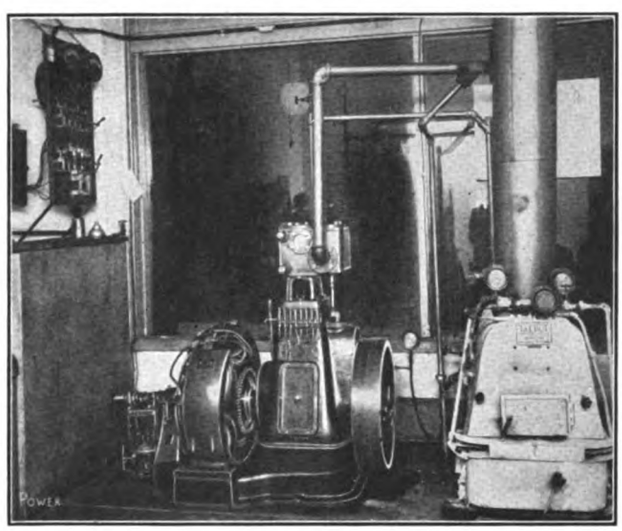
Send for illustrated Bulletin

OFFICE, 100 William St., Room 401, NEW YORK

Telephone, John 373

TALBOT

STEAM POWER PLANTS



The TALBOT Boiler in the above illustration has thirty-nine feet of heating surface and furnishes steam for driving the dynamo engine shown, lighting 240 twenty-five watt lamps and two flaming arc lamps, a load of seven and one-half kilowatts. The total cost per kilowatt hour is 1.3 cents. The Navy Department are using TALBOT Boilers in their launches.

May we send a circular? **TALBOT BOILER CO.,** **120 Liberty St. NEW YORK**

Electric equipment for marine service is described in a number of catalogues published by the General Electric Company, Schenectady, N. Y. "The value of the searchlight is well known. It may save the entire cost of your electrical equipment in a single hour. Electric lights, electric power and electric devices are more convenient, more reliable, and hence less expensive than other methods in a long run at sea. Passenger lines increase traffic by adding searchlights, Edison Mazda lamps, fans, heaters, etc. A freighter can increase yearly receipts by reducing its time in dock by motor loading and by having a good light at night with the G-E searchlight. The General Electric Company makes many other products especially designed for marine work. All of these are described and illustrated in separate catalogues.

Roto tube cleaners are described in Catalogue No. 41, issued by the Roto Company, Hartford, Conn. The following description is given of the Roto type A. D. tube cleaners: "Roto type A. D. air or steam-driven tube cleaners need no introduction. They are in general use all over the world, wherever tube cleaners are used. The Roto positive balanced motors, with Roto improvements in safe and rapid cleaning heads, have completely revolutionized tube cleaning. They have replaced the old turbine or paddle-wheel cleaners in the largest and best managed power plants. The list of users includes the best and best known, the most up-to-date and best managed power plants in the country. In the large power plants of the great traction companies, railroads, mills, mines and factories, where hard scale forms rapidly, our Roto positive balanced motors have replaced the old water-driven turbines. The new Roto is cleaning boiler tubes in from one-tenth to one-quarter the time formerly required. The Roto is doing the work better, getting all the scale, without injury to the boiler tube, and with less cost for power. No scale is too hard or heavy for Roto type A. D. cleaners. The retubing of many boilers and purchase of thousands of new tubes have been avoided by the adoption of Roto type A. D. cleaners after all others failed."

"A Close Call" is the title of the picture printed in several colors on the 1915 catalogue just issued by the Lukens Iron & Steel Company, Coatesville, Pa. This picture is a reproduction of the original painting by James G. Tyler. "The sea is Mr. Tyler's favorite subject, and he has earned the honor of being called one of its best interpreters. The sea appeals to him as a vast living thing, and he has followed its mood with a deep-seated affection that makes itself apparent in all his work. He has chosen for his picture a day of high wind and tumbling surf. He has found the ocean in an hour of rough play, and he has pictured it in a dramatic moment, when the sturdy schooner, driven from its course, has just cleared a rock of formidable proportions and is headed for deep water. It was a 'close call' for the vessel, for, at one moment, she evaded utter destruction only by a few rods. The picture has a thrill for all who knows the dangers of the sea. We appear to be in the midst of a tumult of water. The white horses of the surf dash up in columns, rearing their heads high as they cast themselves upon their old-time granite foes. Back of this great cauldron of seething water lies the sombre, shadowy stretch of the boundless sea. Above, the clouds, gray and threatening, scud across the sky. It is an inspiring scene of cosmic warfare full of stern and splendid beauty."

"Small Power-Driven Compressors" are the subject of Bulletin 34-S, just issued by the Chicago Pneumatic Tool Company, Fisher building, Chicago, Ill. "The ever-increasing number of applications of compressed air in the many fields where it may advantageously and economically employed, have created a demand for small pneumatic plants, which shall be at once simple, compact, substantially constructed units, requiring a minimum amount of attention. We were among the first to recognize that this demand for small power compressors could only be satisfactorily supplied by a company of wide and unquestionable experience and prestige in the art of compressor building, and the success attending the introduction of our line of small machines has justified our initiative in offering them. These compressors supplement our line of over four hundred sizes and types driven by steam, belt, electricity, gas, gasoline, fuel oil and water power, and round out a variety of machines adapted to every possible condition or requirement. Special descriptive bulletins are devoted to each of the various types of compressors that we manufacture, and will be sent upon request addressed to our main offices or nearest branch, as given on the last page of this bulletin. We illustrate and list in the following pages small power compressors particularly suited to the requirements of garage owners, stone cutters, monumental works, electric stations, spraying outfits, and the countless applications to which compressed air lends itself."

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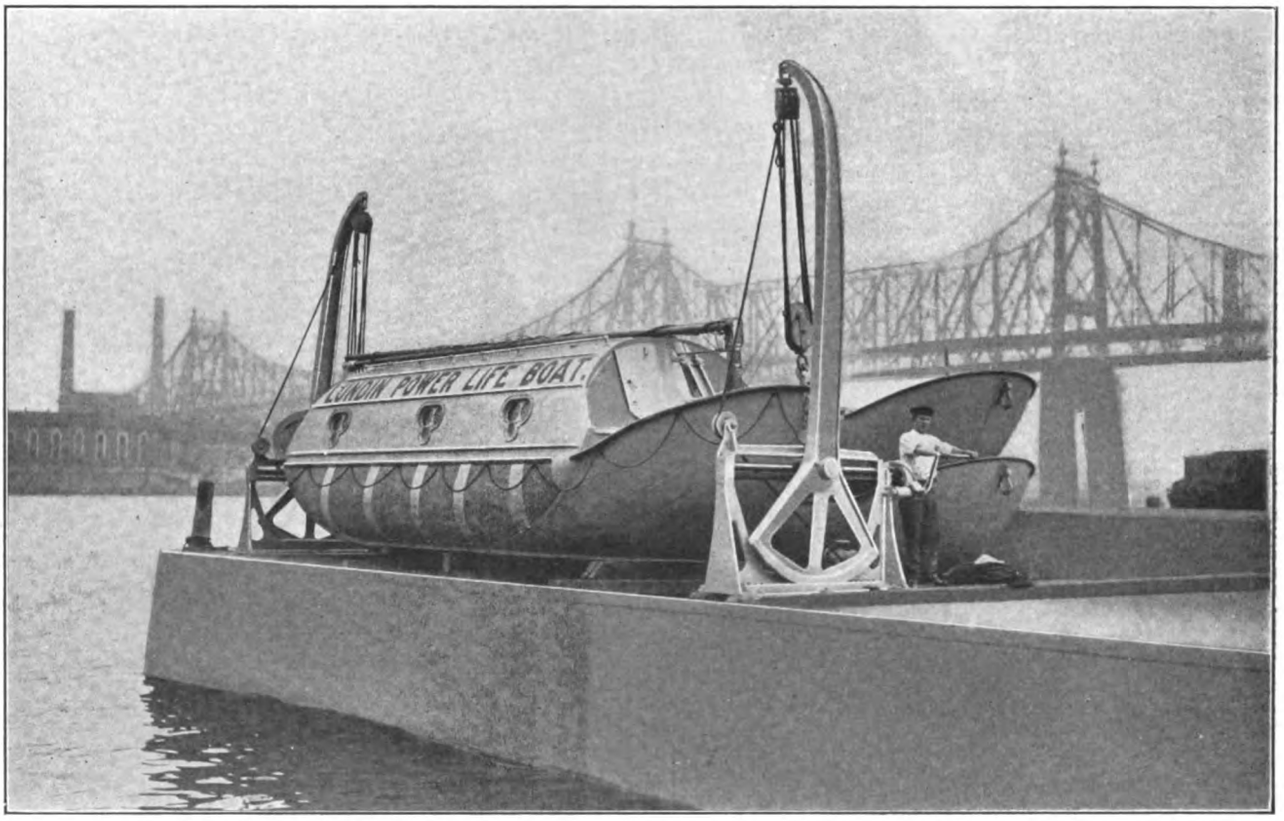
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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"Are You Troubled with Scale?"—This is a question asked by the Joseph Dixon Crucible Company, Jersey City, N. J. The company has issued booklet No. 75 on "Graphite for the Boiler," which describes in full the advantages of using Dixon's graphite for the prevention of scale.

The 144-page "Monthly Journal and Stock List," which is published by Joseph T. Ryerson & Son, Chicago, Ill., should be in the hands of every user of boiler shop tools and machinery of any description whatever. Messrs. Ryerson & Son maintain three great warehouse plants in New York, Chicago and St. Louis, and offer everything in iron, steel and machinery for immediate shipment.

Portable electric drills are described in a circular just issued by the Independent Pneumatic Tool Company, 1307 Michigan avenue, Chicago, Ill. According to this manufacturer "a notable step forward in electric drill construction is shown in the 'Thor.' Progressive users, always on the alert to secure the latest improved equipment, will recognize the many new features which produce the highest efficiency and greatest economy. Made in various sizes."

Lagonda multiple strainers are described in Catalogue R-2, published by the Lagonda Manufacturing Company, Springfield, Ohio. "Nowadays it is found necessary to subject the present boiler installation to sudden overloads and higher continuous loads, so that in many cases the capacity of the boilers has been increased by installing condensers. In the case of steam turbines designed for high vacuum, considerably more power is obtained and about 40 percent less steam is consumed per horsepower-hour when running the turbine condensing over running it when exhausting it to the atmosphere. In the cases of reciprocating engines, 25 to 40 percent of the load is carried by the vacuum. In order therefore to secure and maintain high vacuum to enable boilers, turbines and engines to hold up their loads, the condensers must be kept clean and supplied with a constant uninterrupted flow of cooling water. Besides protecting condensers, the use of a Lagonda water strainer reduces pump troubles. In the case of reciprocating pumps it prevents solid matter from scoring the cylinders, and prevents the clogging of valves and resulting leakage. In the case of centrifugal pumps, a Lagonda strainer prevents such foreign matter from becoming lodged between the impeller blades."

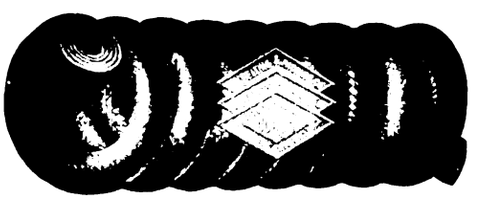
Wolverine engines, their use on ships of many types throughout the world, are described in illustrated folders published by the Wolverine Motor Works, Bridgeport, Conn. Among the interesting illustrations shown is one of the tug *Viking* equipped with a 27-horsepower Wolverine engine and used for towing logs from villages along the Arracan coast to Bassein, India. The *Viking*, according to the Wolverine Motor Company, has towed four heavy cargo boats loaded with 200 tons against a 2-knot current.

"Durable" wire rope for mooring, towing hawsers, ship's rigging, and all similar purposes, is described in a catalogue just issued by the Durable Wire Rope Company, 93 Pearl street, Boston, Mass. The manufacturer states that this rope is made of selected steel, and that each strand is separately served with especially prepared hemp marlin. The rope is also stated to combine the pliability and wearing service of hemp or manilla ropes with the strength of ordinary wire rope, avoiding the disadvantages of both, and being more durable and economical than either.

The Ohio grease lubricator and Ohio cylinder grease are described in an illustrated circular published by the Engineering Supply Company, 2238 North Ninth street, Philadelphia, Pa. A full description is given of these products, which are sent on trial. "The Ohio grease lubricator atomizes or sprays Ohio cylinder grease into the cylinder of an engine or pump. Ohio cylinder grease consists almost wholly of high-grade cylinder stock refined from Pennsylvania crude. It does not contain neutral oils or wood grease. It does not contain any alkali or saponaceous matter. When Ohio cylinder grease is used we guarantee a saving of at least 25 percent. In many cases we have effected greater economies. We offer to prove this saving before asking a prospective purchaser to spend a cent. The ice plants and other establishments where trouble has been caused by oil going over with exhaust this trouble has been entirely removed by the use of Ohio cylinder grease. The Ohio grease lubricator is never sold. It is always loaned. No contract to purchase a specified quantity is required. All we ask is that no other lubricant be fed through this lubricator. We will send Ohio grease lubricator and 25 pounds of Ohio cylinder grease on trial. If a saving of 25 percent over other forms of lubrication is effected, grease to be paid for. If saving of 25 percent is not effected, return lubricator and balance of grease to us."

COBBS HIGH PRESSURE SPIRAL PISTON AND VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

NEW YORK BELTING AND PACKING CO.

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PITTSBURGH, PA., 420 First Avenue
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SPOKANE, WASH., 157 S. Monroe Street

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"Ice Making and Refrigerating Machinery" is the title of the "General Catalogue" which has just been published by the York Manufacturing Company, York, Pa. The company's line of ice-making and refrigerating machinery is fully described and illustrated in this catalogue, which also contains a long list of users of the York vertical single-acting inclosed type ice making and refrigerating machinees.

"Williams Steam Specialties" are the subject of a very complete cloth-bound catalogue of 320 pages and several hundred illustrations which has just been issued by the D. T Williams Valve Company, Cincinnati, Ohio. A copy of this catalogue should be in the hands of every user of such specialties. It describes in detail a very complete line of brass and iron stop and check valves, gate valves, steam cocks, water gages, gage cocks, brass fittings, lubricators, oil and grease cups, steam traps and separators, etc.

"Asbestosteel" is the title of an unusually well-illustrated and printed booklet which is being distributed by the Asbestos Protected Metal Company, Beaver Falls, Pa. "Asbestosteel," which is stated to be especially useful for use on steamship docks and piers and on board ship, is described in part as follows: "Asbestos-protected metal, being a permanent material, presents possibilities absolutely new and hitherto unapproached by any sheet metal. Not only does it displace sheet steel from the field considered its own, but when combined with concrete and other similar materials, it can be used to great economic advantage in the highest class of permanent structures."

"A Few of the Tools Manufactured by the Stow Flexible Shaft Company, Binghamton, N. Y.," is the title of a circular published by the Stow Manufacturing Company, Binghamton, N. Y. "The Stow line of portable tools is the most complete on the market. They are furnished both belt and electric driven. Much time has been expended in the design of these tools to secure the maximum of power to size. Several of our designs are constructed to save floor and bench room, same being of the suspended type, thus putting them out of the way in a safe place when not in use and always in arm's length of your operator. Write us your requirements. We have a tool for your work that will save time and cut your cost of operation."

The Rippley Mfg. & Steel Boat Company, Grafton, Ill., has published an illustrated catalogue describing its line of motor boats, cruisers, K. D. sectional steel hulls, barges, ferryboats, life rafts, hunting, fishing and pleasure boats.

"Steam Boilers and Boiler Feed Water" is the title of a booklet which has just been issued by the American Boiler Life Company, 19 North Market street, Boston, Mass. Our readers who are interested in the subject of "boiler feed water" should write for a free copy of this booklet.

"Seabury" watertube boilers are described in Catalogue 10-A, just published by the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., Morris Heights, New York City. The catalogue states that these boilers are built for hard usage and that there are no screw joints in the generating tubes. They are made for all pressures up to 400 pounds, and minimum weight and space—maximum power are guaranteed.

Locomotive cranes are described in a catalogue published by the Link-Belt Company, Chicago, Ill. "A Link-Belt crane is an all-around machine for general work about any plant. It may be arranged to handle hook block, self-filling grab bucket, drag-line bucket, electric-lifting magnet, or equipped with special boom for steam shovel attachment and pile driver."

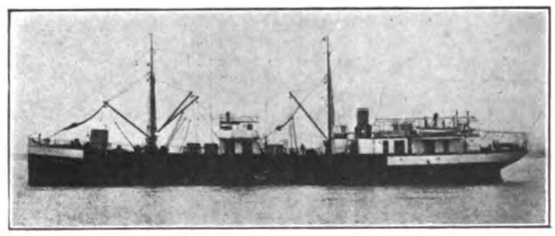
Economical freight handling is discussed in Bulletin No. 80115, just issued by the Sprague Electric Works of the General Electric Company, 527 West Thirty-fourth street, New York. The catalogue states that by the use of Sprague electric freight trucks, freight is easily loaded and unloaded and congestion reduced to a minimum. Grades as high as 25 percent are negotiated without difficulty under full loads.

The Starrett speed indicator is one of a large line of engineering specialties manufactured by the L. S. Starrett Company, Athol, Mass., and described in Catalogue 20-L which the company has just published. In describing this indicator the catalogue states that for taking speed tests on engines, generators, turbines, motors, line shafting or any machinery, the indicator is the simplest and most accurate instrument of the kind made. It is said to be especially valuable in taking speeds when computing engine horsepower, etc. It is made in three styles. Prices, $1.00, $1.50 and $3.00.

ABSOLUTE RELIABILITY assured with—

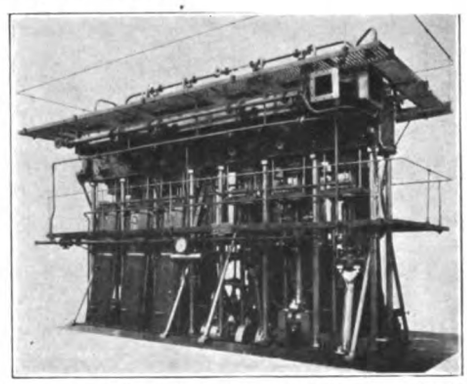
WERKSPOOR DIESEL ENGINES

Direct-Reversible, Marine, Four-Cycle Type



"Vulcanus", the *first* ocean-going Diesel-Driven commercial ship. Placed in service 5 years ago. She is fitted with a 500 H. P. Werkspoor reversible 4-stroke motor. D. W. capacity 1,000 tons. Speed, 8½ knots. Fuel consumption, 2 tons of residual oil per day. Saving to owners $11,000 a year.

also Non-Reversing Land Types and Diesel Driven Lighting, Pumping and Air Compressing Sets for Ship's Auxiliaries



Werkspoor 1,100 H. P. Direct-Reversible Marine Diesel Engine as fitted in the "Juno", "Elbruz", "Selene", "Hermes", "Artemis", "Ares", "Emanuel Nobel", "Loudon", etc.

Eleven Werkspoor - Diesel - Engined commercial seagoing ships up to 3,000 H. P. per vessel, are in regular operation, giving perfect and unequalled service, their reliability being as good as, or even better than, steam.

The numerous repeat orders received by the Werkspoor Co. are the proof of the owner's satisfaction of the splendid working of existing ships so equipped.

The Werkspoor Company are prepared to grant building licenses in America for their Marine and Land Type Diesel Engines. Full details from the—

WERKSPOOR
[THE NEDERLANDSCHE FABRIEK VON WERKTUIGEN EN SPOORWEG MATERIEEL]
ENGINEERS, —— AMSTERDAM
HOLLAND

Sole Representative in the United States

T. ORCHARD LISLE, A. M. I. Mar. E.

Telephone: Greeley 6763
254 West 34th Street
NEW YORK CITY
Telegrams: Werkspoor, New York

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A wall calendar of very convenient size and shape will be sent free to any of our readers who will write the Pocahontas Fuel Company, 1 Broadway, New York, and ask for it. The Pocahontas Fuel Company is the miner, shipper and exporter of "Original Pocahontas" coal, and states that it is the largest producer of smokeless coal in the United States. Latin American, West Indian and European coal consumers are especially invited to correspond with the company.

"S & K Evaporators and Distillers" are the subject of Catalogue 10, Section D E, which has just been published by the Schutte & Köerting Company 1253 North Twelfth street, Philadelphia, Pa. "It is unnecessary, in the present stage of marine engineering, to point out the advantage of using evaporators, as, immediately on their introduction on the market, about thirty years ago, their utility and economy was recognized. The question for the marine engineer to decide now is which evaporator to purchase, and in making a decision he should consider efficiency, capacity, ease in handling and cleaning, freedom from priming, simplicity of construction, strength and durability, weight and space occupied, price. These various points have been given the closest attention by our engineers in designing and building; the result is the evaporator which we are now putting on the market."

S & K spiral corrugated film specialties are described in Catalogue 10, Section F, just issued by the Schutte & Köerting Company, 1253 North Twelfth street, Philadelphia, Pa. "The prime feature of our boiler feed water heater is the concentric spirally corrugated tubes. This construction, besides constantly agitating the water and so preventing the formation of cold cores, keeps the water in a thin film between two heated copper surfaces. This gives an exceedingly high rate of heat transmission, far exceeding anything that has ever been accomplished. Experience has shown that the formation of scale is so limited as to be negligible. This is due to the fact that there is a peculiar expanding and contracting movement constantly taking place in the tubes which breaks off the scale as it forms, and the high velocity of the water scours out the film spaces. Not only does this heater save weight and space by its greater heat transmission per square foot, but by inserting one tube inside the other we get almost two square feet to one in the same space where the tubes are single."

"Scientific Facts" is the title of a profusely illustrated 136-page catalogue just published by the Champion Rivet Company, Cleveland, Ohio. This is the fourth edition of the book, which is an invaluable one to all users of boiler, structural and ship rivets. A copy will be sent absolutely free to any of our readers who will ask for it. The table of contents of the book is very comprehensive, comprising a report on the physical and chemical tests made on "Victor" steel rivets; a letter on government tests by Oscar Textor; a report of analyses by the same man; standard specifications for boiler rivets; standard specifications for boiler rivet steel; standard heads for small rivets; standard heads for large rivets; special heads for rivets; dimensions for standard heads; weights of rivets; coupler and air brake pins, and essays on "How to Heat and Drive Rivets Satisfactorily."

BUSINESS NOTES

AMERICA

THE INTERNATIONAL OXYGEN COMPANY, Newark, N. J., writes INTERNATIONAL MARINE ENGINEERING that the I. O. C. oxy-hydrogen plant, with which the Edison works (recently partially destroyed by fire) was furnished, has remained intact, and that these gases are being used in the storage battery building, which, fortunately, was not touched by the fire.

"FOUR THOUSAND ENGINES BUILT IN TEN YEARS and only one oiling a year for each." This is a remarkable statement, but the American Blower Company, Detroit, Mich, writes us that ten years ago the first ABC self-oiling engine was built, and that since that time more than four thousand have been put into service. "Most of these ABC engines are still in service—some of them have needed only yearly replenishments of oil."

SIXTY-EIGHT PROSPEROUS YEARS for the William Powell Company. The William Powell Company, Cincinnati, Ohio, asks us to call attention to the fact that it is now 68 years old. Its advertisement on page 4 of this issue contains sixty-eight stars. The company manufactures a complete line of globe valves, angle valves, cross valves, gate valves, check valves and other marine specialties, and has made them for sixty-eight years.

Westinghouse Turbines, Reduction Gears and Auxiliaries

FOR MARINE SERVICE

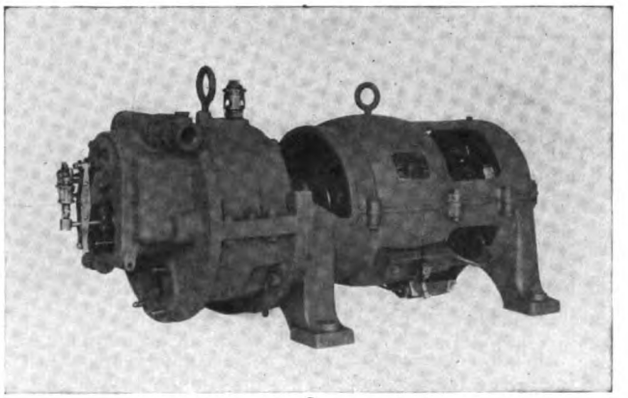
TURBINES
of highest efficiency and reliability resulting from 19 years of experience; over 3,000,000 hp. built and building.

REDUCTION GEARS
of small and large power for propelling units and auxiliary drives. Over 95,000 hp. built. Cruising gears for two U. S. Battleships building.

GEARED TURBINE UNITS
of small and large power for propelling vessels of all classes and for auxiliary drive. The most efficient propelling unit built

TURBO-GENERATORS
built in sizes from 1 kw. up—both direct-connected and gear driven. These units are simple, reliable and very efficient.

BRIDGE CONTROL
for operating main turbine from bridge. Instantaneous operation, avoids confusion and accidents. Found satisfactory in test by Navy Department



10 KILOWATT DIRECT-CURRENT GENERATOR.
A most efficient and reliable direct-current unit for moderate and large power.

CONDENSING PLANTS
for main turbine and turbo-generator. Exceptionally high vacuum maintained. Ideal units for marine turbine service.

CONDENSER PUMPS
High efficiency air, circulating and condensate pumps. Westinghouse-Leblanc Air Pump produces highest obtainable vacuum. No loss of fresh water.

CENTRIFUGAL PUMPS
of all sizes for high and low pressure service. Boiler-feed and fire pumps; turbine or motor driven. These pumps are simple and rugged and very reliable.

CENTRIFUGAL FANS
of all sizes for ventilation and forced draft. Turbine or motor driven. Horizontal or vertical type. Strong, compact and efficient.

AIR FURNACE IRON CASTINGS
of all sizes made in a thoroughly modern foundry. Large castings and turbine cylinders a specialty.

The Westinghouse Machine Co.

Prime Movers and Auxiliaries
East Pittsburgh, Pa.

NEW YORK · CHICAGO · PHILADELPHIA · PITTSBURGH · BOSTON · ATLANTA · DETROIT · CLEVELAND

SAN FRANCISCO	Hunt, Mirk & Co.	IQUIQUE, CHILE	J. K. Robinson & Co.	
SEATTLE	Hunt, Mirk & Co.	TOKIO, JAPAN	Takata & Co.	
HAVANA	Galban & Co.	CARACAS, VENEZUELA	H. I. Skilton	
SAN JUAN	Porto Rico Construction Co.	MEXICO CITY	Cia Ing. Imp. y Const., S. A.	

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ASHTON
Pop Safety Valves
The Quality Standard

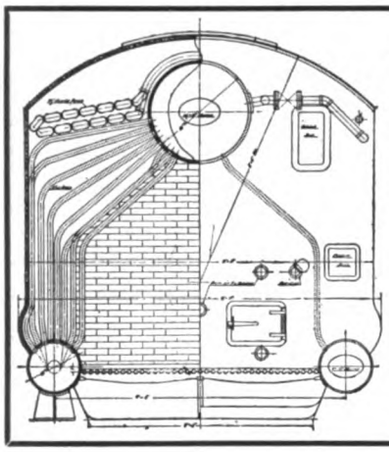
ASHTON
Steam Gages
The Accuracy Standard

No. 16 Style Marine Valve
THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

THE DIAMOND POWER SPECIALTY COMPANY, 58 First street, Detroit, Mich., has received a contract from the Navy Department calling for seven of its soot cleaners for use in Babcock & Wilcox boilers at the Washington navy yard. One soot cleaner was installed and thoroughly tested. After it was found satisfactory the Navy Department placed an order for six more.

BIG PIPE COVERING CONTRACT.—The pipe insulation contract for the new Utah State Capitol at Salt Lake City was recently awarded to the H. W. Johns-Manville Company, New York. The high-pressure pipes will be covered with J-M Asbesto-Sponge Felted Pipe Covering, a product made up of laminations of felt composed of asbestos and finely ground sponge. The materials being naturally cellular, they form the basis for the claim that this covering confines more "dead air" cells than any other covering, and therefore possesses higher heat-insulating value. The heating pipes will be covered with J-M Asbestocel Pipe Covering, which is built up on the arch principle. Sealed air channels run around the pipe instead of parallel with it, thus preventing the circulation of air and consequent heat radiation.

NATIONAL TUBE COMPANY
PITTSBURGH PA.



SEABURY
WATER TUBE BOILERS
BUILT FOR HARD USAGE
NO SCREW JOINTS IN GENERATING TUBES
All Pressures to 400 Lbs.
MAXIMUM WEIGHT AND SPACE—MAXIMUM POWER
GUARANTEED
WRITE FOR NEW CATALOG "10A" BOILER DEPARTMENT
Gas Engine & Power Co. and Charles L. Seabury & Co.
CONSOLIDATED
Morris Heights, New York City

"PALMETTO" PACKING ON BRITISH BATTLESHIPS.—Among the other well-known battleships belonging to the British navy equipped with Palmetto packing is the H. M. S. *Thunderer*. Palmetto packing was selected for her trial trip because, according to the manufacturer of this packing, Greene, Tweed & Company, 109 Duane street, New York, and Queen Ann's Chamber, Westminster, S. W., "Palmetto packing has a well-established reputation for great lasting qualities under the most exacting conditions, especially high-pressure superheated steam." A free sample of Palmetto packing will be sent to any engineer, architect, shipbuilder or ship owner upon request.

GREAT LAKES NAVIGATION, SEASON OF 1914.—Unsatisfactory, unprofitable, unpleasant are some of the terms applicable to the business of vessel men on the Great Lakes for the season of 1914. From start to finish each succeeding month proved disappointing at its close. Shipments of iron ore from Lake Superior were about 18,000,000 tons less than in 1913, and the smallest of any season since 1908. The season closed officially at midnight November 30, when all marine insurance except on vessels under way from one port to another and several loading grain on Lake Superior just managed to clear before the midnight hour of expiration. A few wild carriers were operated and a few boats in regular trade until December 10 owing to unusually mild weather from November 29 to December 10. Offers of 2 cents per bushel on grain out of Duluth for first days of December were rejected. Quite a number of boats will hold cargoes at upper lake ports until spring. About the last successful wrecking operation was the getting afloat of the steamer *Lehigh* on December 3 by the Reid Wrecking Company from a point near Manistique on Lake Michigan, where she had run ashore. The salvage of the big steel steamship *Howard M. Hanna*, on Lake Huron, where she was blown to pieces on November 9, 1913, was a Reid job. This steamer has since passed into hands of Canadian owners and been completely rebuilt by the Collingwood Shipbuilding Company. The number of lives lost on the Great Lakes, the number of vessels lost and value of cargoes are small as compared with the record of the season of 1913. Sanitary disposal of sewage and garbage from lake vessels, to prevent contamination of waters from which all the big lake cities get their supply, is a problem receiving much attention, and much in "safety first" education and methods has been accomplished the past season. The Welfare Plan, aiming at the bettering of all conditions and regulations of lake navigators and seamen is working more and more satisfactorily, and the savings bank plan has made hundreds of saving men out of formerly financially impecunious ones. Vessels lost number about twenty-four steamers, tugs, schooners and barges, on seven of which about eighty lives were lost. The steamer *C. F. Curtis* and her barges *Marvin* and *Peterson* were lost with every soul aboard, numbering thirty-four. The steel steamer *Benj. Noble* foundered with her entire crew of twenty. The Canadian lighthouse steamer *Montmagny* was lost in a collision with the steamer *Lingan* 25 miles below Quebec, Canada, and fifteen lives of people on the *Montmagny* were lost. The Canadian schooner *William Jamieson* foundered on Lake Ontario with a loss of six lives. Ten of the vessels lost were destroyed by fire. The loss of the steamer *Empress of Ireland* by collision below Montreal in the St. Lawrence River, with a loss of 965 lives, while close at hand cannot be classed among lake vessels. Not a life was lost aboard of a passenger vessel in the entire season on the Great Lakes.

TRADE PUBLICATIONS

GREAT BRITAIN

"Recent Developments in Machine Stoking" is the title of a 40-page catalogue published by Ed. Bennis & Company, Ltd., Little Hulton, Bolton. "The Bennis patent improved smokeless chain grate is applicable to any watertube boiler or to return-tube boilers—where the fire is under the boiler shell and the flame returns through the tubes—to brewers' coppers and

NATIONAL MOTOR BOAT SHOWS
NEW YORK
MADISON SQUARE GARDEN
January 30th to February 6th, 1915
CHICAGO
COLISEUM
February 27th to March 6th, 1915
For space, information, etc., address IRA HAND, Secretary, 29 West 39th St., N.Y.C.

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Bolinders
Oil Engines

DIRECT REVERSIBLE

5 to 500 B. H. P. UNITS

PUMPING SETS, ELECTRIC LIGHTING SETS and WINCH SETS

Use Cheap Fuel Oils

OVER 10,000 IN ACTUAL SERVICE

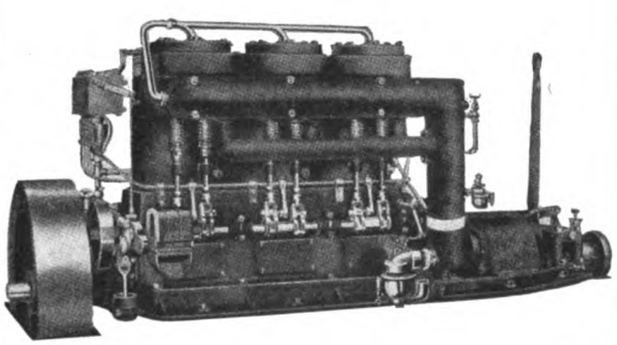
Bolinders Company

30 Church Street

New York

"WOLVERINE"

The Motor with the Bore and Stroke



REAL HEAVY DUTY MARINE ENGINES

FOR WORK OR PLEASURE BOATS

USING

KEROSENE-DISTILLATE-PRODUCER GAS

CATALOG NO. 73

WOLVERINE MOTOR WORKS

BRIDGEPORT, CONN., U. S. A.

(Formerly Grand Rapids, Mich.)

MARINE SOCIETIES.

AMERICA.

AMERICAN SOCIETY OF NAVAL ENGINEERS
Navy Department, Washington, D. C.

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS
29 West 39th Street, New York.

NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS
29 West 39th Street, New York City.

UNITED STATES NAVAL INSTITUTE
Naval Academy, Annapolis, Md.

AMERICAN ASSOCIATION OF MASTERS, MATES AND PILOTS
National President—John H. Pruett, 423 Forty-Ninth St., Brooklyn, N. Y.
National First Vice-President—H. F. Strother, 2022 Oakland Ave., Piedmont, Cal.
National Second Vice-President—Geo. B. Downing, West End, Eighth St., Eighth Ward, Norfolk, Va.
National Third Vice-President—J. C. Proctor, 1136 State St., New Orleans, La.
National Fourth Vice-President—W. T. Daniels, Jr., Pilot's Office, Bay St., E. Savannah, Ga.
National Treasurer—A. B. Devlin, 21 State St., New York.
National Secretary—M. D. Tenniswood, 308 Vine St., Camden, N. J.

THE AMERICAN SOCIETY OF MARINE DRAFTSMEN
President—J. Emile Schmeltzer, 221 Cumberland street, Brooklyn, N. Y.
Vice-President—H. A. Hope, Newport News S. B. & D. D. Co., Newport News, Va.
Secretary—B. G. Barnes, 40 Faxon avenue, Quincy, Mass.
Treasurer—P. K. Thurston, Navy Department, Washington, D. C.
Executive Committeeman—H. C. Towle, Haddon Heights, N. J.

MARINE ENGINEERS' BENEFICIAL ASSOCIATION
NATIONAL OFFICERS.
President—Wm. F. Yates, 17 State St., New York City.
First Vice-President—E. C. Mausshardt, 1046 14th St., San Francisco, Cal.
Second Vice-President—Geo. H. Bowen, Port Huron, Mich.
Third Vice-President—Charles N. Vosburgh, 6323 Patton St., New Orleans, La.
Secretary—Geo. A. Grubb, 1040 Dakin St., Chicago, Ill.
Treasurer—A. L. Jones, 38 Avery Ave., Detroit, Mich.

CANADA.

DIRECTORY OF GRAND COUNCIL, N. A. OF M. E. OF CANADA FOR 1914-15
GRAND OFFICERS
Grand President—L. B. Cronk, Windsor, Ont.
Grand Vice-President—A. F. Hamelin, 3210 Letang St., Montreal.
Grand Secretary-Treasurer—Neil J. Morrison, P. O. Box 238, St. John, N. B.
Grand Conductor—Ephraim Reid, Room 8, Jones Building, Vancouver, B. C.
Grand Doorkeeper—A. J. Ross, Halifax, N. S.
Grand Auditors—James Gillie and A. E. Kennedy, Kingston, Ont.

GREAT BRITAIN.

INSTITUTION OF NAVAL ARCHITECTS
5 Adelphi Terrace, London, W. C.

INSTITUTION OF ENGINEERS AND SHIPBUILDERS IN SCOTLAND
39 Elmbank Crescent, Glasgow.

NORTHEAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS
Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

INSTITUTE OF MARINE ENGINEERS, INCORP.
58 Romford Road, Stratford, London, E.

similar furnaces. One of the principal advantages of this type of grate is that a very large grate area can be obtained under a boiler, much larger than could be dealt with by hand-firing. The economies to be obtained over hand-firing vary from 10 percent upwards, for not only is a higher actual boiler efficiency obtained and maintained, but the stoker is generally capable of burning a fuel cheaper in initial cost. We are always pleased to test samples of fuel submitted by prospective clients in our laboratories, and to give definite figures as to what may be expected as to economies and evaporation in each individual case. The Bennis chain grate with the patent halved link was the first chain grate capable of satisfactory burning fine slack coals."

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RAINBOW PACKING

Yes—Rainbow!

That is the 25-year-old name of the rubber flange packing, red in color, that squeezes into the roughness of the flange surfaces, then becomes vulcanized to the right hardness, retaining enough "give" to take care of the "come and go" of the pipes.

Rainbow is good for all Steam, Ammonia, Water and Air pipes.

PEERLESS RUBBER MFG. CO.

16 Warren Street, New York

For Sale Everywhere

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TRADE PUBLICATIONS.

AMERICA

The "Winter Moorings" edition of the *Chicago Lake Marine News* has just been issued by Harvey C. Beeson, publisher of *Beeson's Marine Directory*, 732 South Sherman street, Chicago, Ill. Mr. Beeson has produced a paper of considerable value to those interested in lake and inland waterways, river, harbor and kindred interests. Besides many items concerning trade on the Great Lakes, there is an index to lake ports and a list of the moorings of vessels during the winter season of 1914-1915, not only of steamers but of tugs, fish tugs and barges.

"A B C Engines Afloat the World Over" is the title of a booklet just published by the American Blower Company, Detroit, Mich. "It would be a good plan for you to find out more about the A B C engines, which are built to fit your requirements. Write, giving us as much information as possible, and our engineering department will advise with you regarding the equipment best suited to your needs. This places you under no obligation. It will be information decidedly valuable to you."

"Marine Glue" is the title of a booklet published by L. W. Ferdinand & Company, 201 South street, Boston, Mass. The following statement is made in connection with Jeffery's Marine Glue for waterproofing canvas: "The glue for this purpose is of a softer quality than that used for batteries and yachts' decks. After being melted over a moderate fire, spread the glue on the surface of the wood or iron with a stiff wire-bound brush, leaving on a good body; lay the canvas on the glue and pass an ordinary hot flat-iron over the canvas and make the glue sweat through, taking care not to have the iron so hot as to scorch the canvas. (Experience will immediately show the heat required.) Another way of application is to coat the canvas on one side and lay it glued-side downwards on the wood or other substance requiring to be covered, passing the iron over as before—the canvas will then be found perfectly waterproof and adhering tightly to the wood, etc. In the course of a few minutes a thin coating of glue over the canvas may be added (if desired) and the iron again passed lightly over it. A few galvanized tacks should be added to the edges and angles where necessary. The canvas can then be painted."

Turbines, fans, engines, generating sets, forced draft apparatus and gasoline generating sets are described in Bulletin 205-O, issued by the B. F. Sturtevant Company, Hyde Park, Boston, Mass. Any of the Sturtevant bulletins, and also the company's general catalogue, will be sent free upon request to any of our readers who will mention INTERNATIONAL MARINE ENGINEERING.

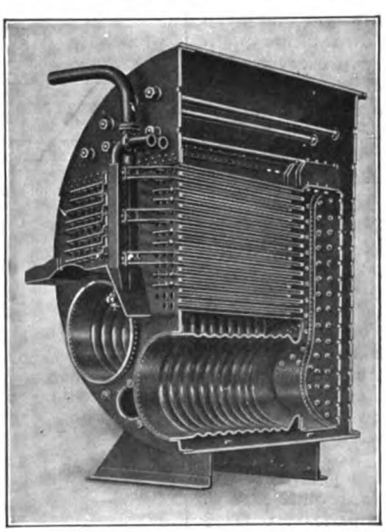
A useful pocket diary *is* being distributed by the C. M. Lane Lifeboat Company, 246 Huron street, Brooklyn, N. Y. This diary contains a number of tables of weights and measures, some statistics concerning the Panama Canal, rates of domestic and foreign postage, including parcels post rates, population of cities as given by the last census, etc. A copy will be sent free to any of our readers upon request.

The Seabury watertube boiler for marine service is described in Catalogue 10-A just published by the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., Morris Heights, New York City. "In presenting this catalogue, descriptive of the Seabury safety watertube boiler, it has been assumed that the architect or engineer who may have occasion to refer to it, is already, by virtue of his position, familiar with the essential requisites of a boiler, so that it remains but to present to him the details of construction wherein the Seabury boiler differs from others and wherein it performs its functions differently or to better advantage. The fact that it does so has already been well established. The Seabury safety watertube boiler has for over twenty years stood unsurpassed under various conditions of service, both stationary and marine, and the architect and engineer may rest assured of an unexcelled performance under any conditions to which we ourselves would be willing to subject it. We therefore invite the engineering profession to consult us freely on any proposition requiring boiler installation. Modifications are sometimes made to meet particular conditions, as may be judged from the fact that Seabury safety watertube boilers are now in use for such varied purposes as heating public baths, under low pressure, and for driving the fastest yacht in the world, where a permissible steam pressure of 350 pounds was provided. Our engineering staff is ready to co-operate in the production of power plants to meet any special requirements that may come within the scope of a watertube boiler of this class, either for stationary or marine work, to which end all communications should be addressed."

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

SEND FOR OUR CATALOGUE [A]

LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
PEOPLES GAS BLDG., CHICAGO

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The Auld "Quitetite" type high-pressure air-reducing valve is described in Catalogue 8-R issued by the Auld Company, 1255 North Twelfth street, Philadelphia, Pa. The catalogue states that this valve, which has been recently supplied to United States submarines, gives a constant reduced pressure on the low-pressure side, even though the initial pressure fluctuates as much as 1,000 pounds and over, without making any difference to the low-pressure side. The valve is especially designed for reducing high-pressure air of, say, 3,000 pounds to atmosphere, and is also made for intermediate pressures. A full description of the operation of the valve is contained in the catalogue.

"The Liberal Service Plan" is the title of a booklet published by the Prest-O-Lite Company, 818 Speedway, Indianapolis, Ind. The company states that the use of Prest-O-Lite dissolved acetylene with any make of oxy-acetylene welding of cutting apparatus, provides large advantages in portability, economy, simplicity and efficiency; that it effects important savings of time, labor and material in boiler shops where sudden breakdowns of machinery are likely to occur at critical times. The complete welding plant is rushed to the spot and repair made immediately without delays, dismantling or costly replacements.

"Ferrenewo Valves" is the title of an illustrated circular just issued by the Lunkenheimer Company, Cincinnati, Ohio. The following description is given in the circular of these valves: "All parts renewable. Every individual part of the Lunkenheimer Ferrenego valve can be renewed, and this applies more particularly to the seat and disc. Unless accident happen the body, the life of this part should equal that of the connecting pipe, consequently all repairs can be quickly and easily made without the trouble and expense of breaking pipe connections. Lunkenheimer original union connection between the hub and body not only protects the uniting threads from corrosion, but aids in strengthening the neck of the body. Stuffing-boxes have gland follower on all sizes except the ¾ inch, and can be repacked while the valve is under pressure. Passages through the bodies are free and unobstructed, as the smallest area is in excess of that of the connecting pipe."

"Vatudrip," an anti-rust liquid, is described in a bulletin issued by the American Rust Proof Company, 30 Church street, New York. Vatudrip may be applied by dipping or brush to any metallic surface. "By government test one gallon of Vatudrip covers over 800 square feet of Smooth surface, and is 34 percent more fluid than the thinnest oil. Applied to the finest engraved steel plate or crude casting, the result is the same—absolute protection from rust or corrosion. As a coating on tin, corrugated iron roofing or other metal building material, it has no equal. Can be used for this before painting with other paint or without. New tin roofs coated before painting seven years ago now show the tin as bright and clean as when Vatudrip was applied, and the brown oxide paint which covered the Vatudrip is wonderfully preserved. In other words, rust had no effect upon it, while other roofs in the same locality have been practically destroyed by the action of the salt air. In the protection of machinery, tools and all metal implements stored outside or under cover, Vatudrip meets a long-felt want. Iron or steel wire screens will not rust when treated with Vatudrip."

The Never-Slip Safety Clamp for handling boiler plate is described in a circular just published by the Never-Slip Safety Clamp Company, 141 Broadway, New York. "The Never-Slip Safety Clamp is superior to any other clamp ever put on the market, combining great strength with absolute safety and considerable saving in time and labor. The clamps are made of high-class open-hearth steel and are annealed. They cannot slip, but give a strong, tight grip and are very easily attached or removed. Size No. 1 will lift plates up to ¾ inch thick, and has a capacity of 6 tons per pair, or being able to lift 400 square feet of plate with absolute safety; weight per pair 10 pounds. Size No. 2 will lift plates from ¾ inch to 1½ inches thick, and has a capacity of 9 tons per pair, thus being able to lift 300 square feet of plate with absolute safety; weight per pair 30 pounds. Size No. 3 lifts plates from 1½ inches to 2 inches, and has a capacity of 12 tons per pair, thus lifting 300 square feet with absolute safety; weight per pair 72 pounds. The vertical plate clamps are made also of high-class open-hearth steel and are annealed. Size No. 1 vertical clamp will life plates up to 1 inch thick, and has a capacity of 4 tons; weight per pair 44 pounds. Size No. 2 vertical clamp will lift plates from 1 inch to 2 inches thick, and has a capacity of 9 tons; weight per pair 84 pounds. Invaluable to boiler makers, rolling mills, foundries, tank constructors, ship yards, or any plant where plates or metal sheets are handled. Cannot slip and by its use costly accidents are avoided."

Calipers and Dividers
for Every Use
There are hundreds of jobs around an engine room requiring the use of calipers and dividers. Ours are made in such a variety of styles and sizes that you are sure to find what you need for your work.
Starrett Tools
include many useful instruments for the engineer—speed indicators, ratchet wrenches, steel tapes for taking belt lengths, thickness gages, squares, levels, etc.
Send for free 320-page catalog No. 20L describing 2100 styles and sizes. Starrett Tools are sold at all good hardware stores.
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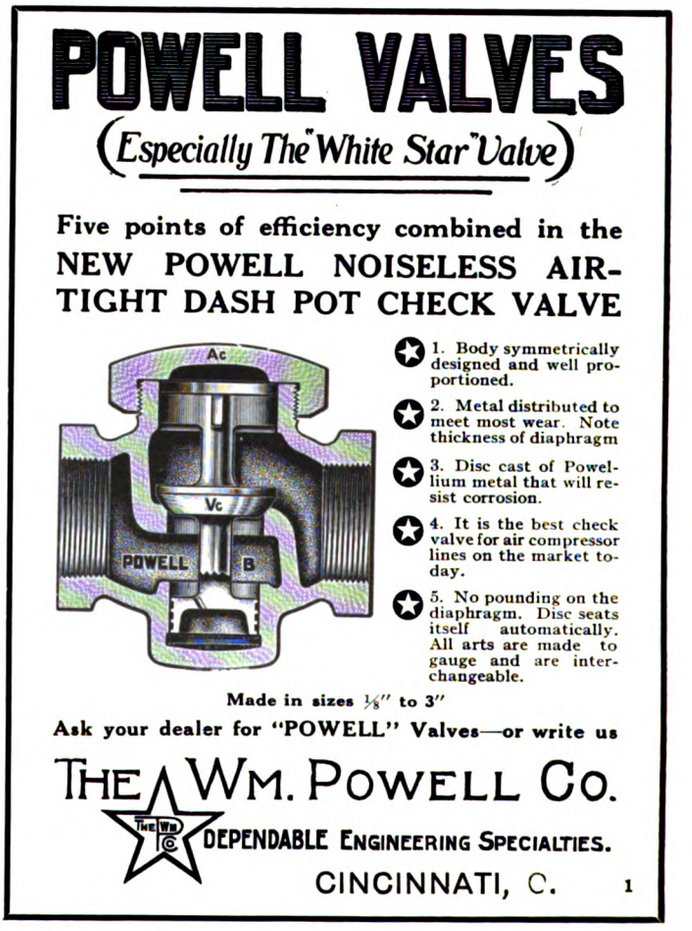
The L·S·Starrett Co·Athol·Mass·
World's Greatest Toolmakers
New York London Chicago


POWELL VALVES
(Especially The "White Star" Valve)
Five points of efficiency combined in the
NEW POWELL NOISELESS AIR-TIGHT DASH POT CHECK VALVE
Ac
Vc
POWELL
B
1. Body symmetrically designed and well proportioned.
2. Metal distributed to meet most wear. Note thickness of diaphragm
3. Disc cast of Powellium metal that will resist corrosion.
4. It is the best check valve for air compressor lines on the market today.
5. No pounding on the diaphragm. Disc seats itself automatically. All arts are made to gauge and are interchangeable.
Made in sizes ⅛" to 3"
Ask your dealer for "POWELL" Valves—or write us
THE WM. POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES.
CINCINNATI, O.

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Protect Your Boilers with

Dixon's

The Pioneer

BOILER GRAPHITE

Scale cannot form, no matter how bad the water, in a boiler where **Dixon's Flake Boiler Graphite** is used. The fine flakes coat the interior surfaces with pure graphite to which scale will not adhere. No graphite but **flake** graphite has this effect.

Send for "Graphite For the Boiler," No. 75-T.

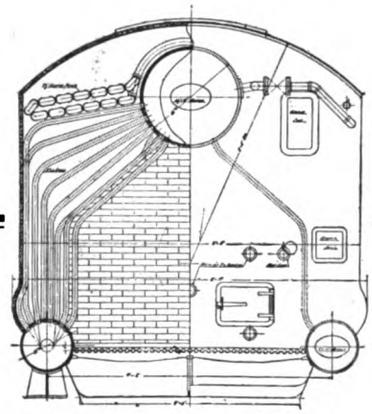
Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

NATIONAL TUBE COMPANY

PITTSBURGH PA.



SEABURY WATER TUBE BOILERS

BUILT FOR HARD USAGE

NO SCREW JOINTS in GENERATING TUBES

ALL PRESSURES TO 400 LBS.

Minimum Weight and Space--Maximum Power

GUARANTEED

WRITE FOR NEW CATALOG "10A" BOILER DEPT.

GAS ENGINE & POWER CO. and CHARLES L. SEABURY & CO.

CONSOLIDATED

MORRIS HEIGHTS NEW YORK CITY

A catalogue describing punches and shears, such as vertical, horizontal and multiple punches; plate, bar, angle, universal and gate shears for boiler, bridge and railroad shops, will be sent to any of our readers who will mention THE BOILER MAKER and write for a copy to the Ironton Punch & Shear Company, Ironton, Ohio.

"Vismera" iron, which is guaranteed 99.86 percent pure, is described in a booklet published by the Inland Steel Company, First National Bank building, Chicago, Ill. The booklet advises builders of stacks to build them "to last, where they rusted out before, and your fame will grow." Vismera iron is made in suitable widths and lengths and gages for stacks, tanks, up-takes, breechings, etc.

"Little David" drills, which are built in several sizes for drilling, reaming, tapping and flue rolling, are described in Bulletin 8207, just issued by the Ingersoll-Rand Company, 11 Broadway, New York. The Ingersoll-Rand Company states that it has received the following report from a large boiler works: "A No. 1 'Little David' with 'C' gearing is being used for 4-inch and 4½-inch flues. It is the most satisfactory machine we have ever had for this heavy flue rolling."

The Bourne-Fuller Company, Cleveland, Ohio, will place any reader of THE BOILER MAKER on its mailing list to receive its monthly stock list regularly if it receives written requests to do so. All of our readers who are interested in boiler plate, boiler flues, rivets, tool steel. Byers pipe, iron and steel bars, blue annealed sheets, staybolt iron, etc., should write to the Bourne-Fuller Company and ask for this stock list.

A new catalogue describing seamless steel boiler tubes, arch tubes, superheater flues and tubes, has been issued by the Pittsburg Steel Products Company, Pittsburg, Pa. The catalogue states that this company's products are made exclusively of the highest quality of basic open-hearth steel of special formula, which is very low in sulphur and phosphorus, and which resists corrosion and pitting. They are said to be true to size and gage, to fit perfectly in the flue sheet. "They have no weld, have greater tensile strength and elastic limit, a greater factor of safety and increase the efficiency of boiler service."

"Clip" valves are described by the Lunkenheimer Company, Cincinnati, Ohio, in a circular the company has just issued. "The entire success of this valve, as in the case of all other Lunkenheimer specialties, is due to the quality of materials, uniformly maintained under the supervision of our chemical and physical laboratories; workmanship uniform to gage, and perfection of finished and assembled product, by means of individual tests and inspection before and after assembling. Lunkenheimer Clip gate valves are made in two patterns, viz.: inside screw rising stem and quick-opening sliding stem. Both patterns can be had with iron body and bronze mounting or in all iron."

A full line of valves *is* described in a circular issued by McNab & Harlan Manufacturing Company, 55 John street, New York. "To meet the demands of the trade and marine engineers for a first-class valve, we have designed and made equipment to produce a full line of regrinding valves. These valves are manufactured under strictly up-to-date methods. Compared with other valves of this type, the workmanship and alinement of all parts are second to none. The metal is of the very best quality steam metal, and selected after careful consideration and chemical and physical tests to be the most saitsfactory to give service where conditions require a valve of superior quality."

A booklet on the subject of autogenous welding will be sent free to any of our readers, upon request, by the Davis-Bournonville Company, Marion Station, Jersey City, N. J. This booklet states that "You are interested in the progress of autogeneous welding if you are interested in metal working, because of the economy of operation and the improvement in construction which can be attained in almost every case. Notwithstanding the exceedingly unfavorable business conditions, especially during the war period, and a large reduction in the price of our apparatus in the early part of the year, the sales of the Davis-Bournonville Company for 1914 have been materially greater than for the previous years. Not only have the sales been larger, but the development of the art by the company has been greater than before. Our progress in automatic machinery has been particularly gratifying, while our standard oxy-acetylene and oxy-hydrogen apparatus is constantly receiving wider recognition for real merit."

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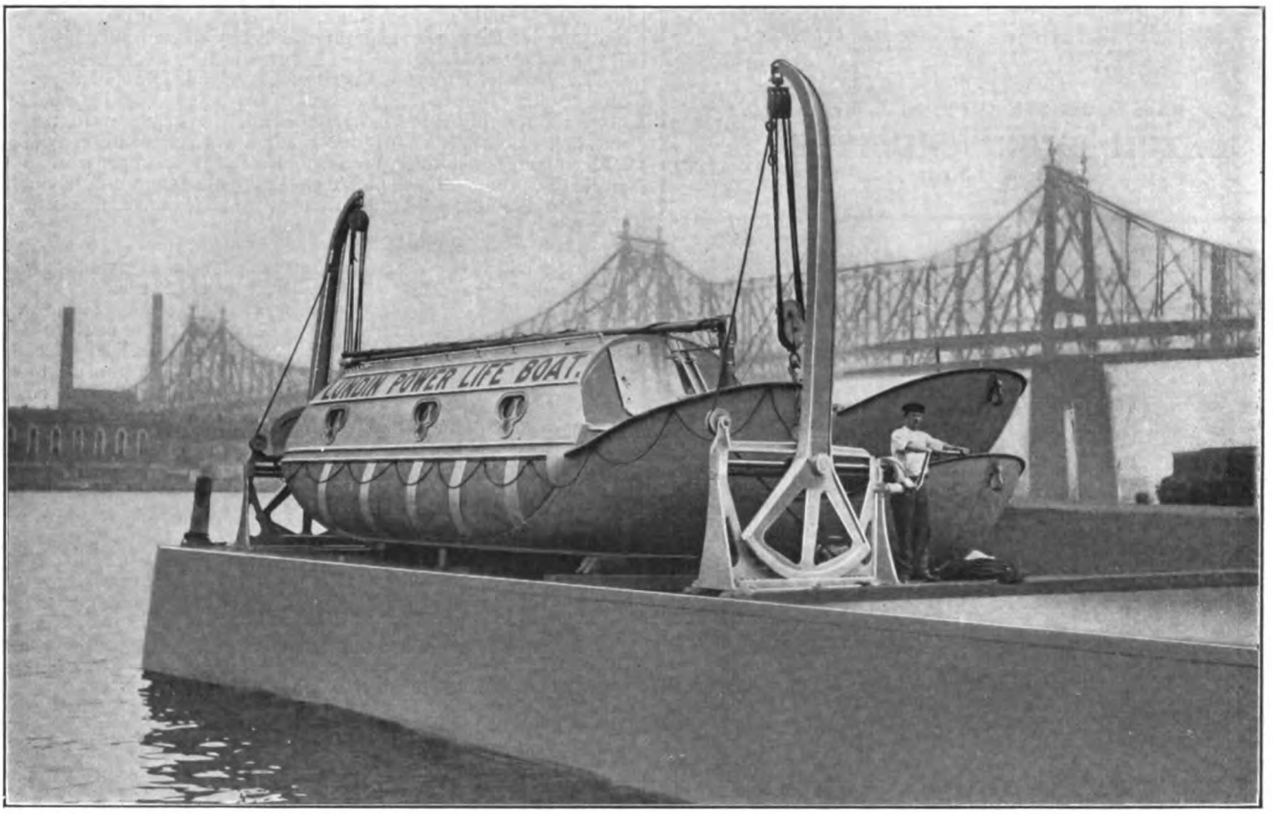
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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The Wheeler Condenser & Engineering Company, Carteret, N. J., has issued some literature described a rectangular rain-type, counter-current jet condenser with complete turbine-driven, self-contained auxiliaries, recently supplied to the city of Seattle, Wash. This condenser is stated to have a capacity of 97,500 pounds of steam per hour at 28½ inches vacuum.

Pop safety valves, steam gages and other marine specialties are described in a handsomely illustrated catalogue issued by the Ashton Valve Company, Boston, Mass. This catalogue should prove interesting to anyone who has anything to do with the operation of valves, gages and similar marine specialties.

The sectional tube expanders made by the J. Faessler Manufacturing Company, Moberly, Mo., are described in Catalogue No. 32, which the company has just issued. In this catalogue the claim is made that the Faessler safety sectional expander with quick-acting knockout is by far the safest sectional expander made. No side hammering is necessary to loosen the mandrel. "The mandrel is backed out easily and quickly by simply striking direct blows on the knockout. We make boiler tools only—sectional and roller tube and superheater flue expanders, beading tools, flue cutters—all quick, safe, durable and accurate. Try any Faessler tool for sixty days at our risk."

"Paragon" forged drills are described in Catalogue No. 38, just issued by the Cleveland Twist Drill Company, Cleveland, Ohio. "The Paragon high-speed drill is forged hot from the original bar in special dies. This process produces a drill with correctly shaped flutes having straight cutting lips and the maximum chip area. The flat taper shank is one piece with the drill, forged without weld or joint from the same bar, and is accurately ground to size. As the strain of driving is brought by our specially designed Paragon sockets to the large end of the shank where it has the greatest cross sectional area, the Paragon drill has a stronger drive than any other flat twist drill. The Paragon sockets, specially made to fit Paragon flat taper shanks, are both compact and inexpensive. They are furnished as shell, fitted or rough sockets, and have the same outside dimensions as regular sockets and sleeves. By means of the flat tapered holes, accurately fitting the Paragon flat shanks, they center and drive the drills as true as regular taper sockets."

"Elertric Arc Welding" is the subject of Bulletin B-4001, published by the C & C Electric & Manufacturing Company, Garwood, N. J. "The surest test of a welding system comes when making joints to stand high pressures. The C & C system of electric arc welding has been used on work to withstand the highest pressures of commercial use. Joints made with this apparatus insure the greatest uniformity and highest strength, because of the great freedom from oxidizing elements and the possibility of doing absolutely uniform work because of the patented control system.

TRADE PUBLICATIONS

GREAT BRITAIN

The "Holme" Hatchway Control for Cranes is the subject of a catalogue published by Edward Holme & Company, Ltd., Chester Road, Manchester. "The Manchester Ship Canal is the latest dock equipped with the Holme gear. This dock, with its appointments, is one of the largest and best equipped in the world. It has twenty-six electric cranes upon the quay wall, all of which have the Holme patent hatchway control gear installed. Such satisfactory results were obtained that the Manchester Ship Canal Company ordered the further equipment of between fifty and sixty hydraulic cranes under the Holme patents. Not a single accident of even trivial character to the men working below has been attributable to the cranes since the gear has been installed. To shipowners it means a quicker turn round for their vessels, and, as a natural sequence, increased prestige to the port."

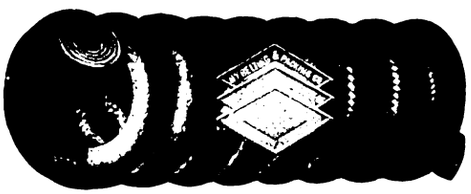
BUSINESS NOTES

AMERICA

CHAUNCEY B. HEATH, of Boston, has been appointed general sales manager for the Bantam Anti-Friction Company, Bantam, Conn., with headquarters at Bantam. President Rogers has made this appointment that the many customers of the company may have the best of attention while he is sacrificing himself on the altar of his country in the Connecticut Legislature for the coming year.

COBBS HIGH PRESSURE SPIRAL PISTON AND VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

NEW YORK BELTING AND PACKING CO.

91 and 93 Chambers Street, NEW YORK

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CHICAGO, ILL., 130 West Lake Street
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PHILADELPHIA, PA., 821-823 Arch Street
SAN FRANCISCO, CAL., 519 Mission Street
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PORTLAND, ORE., 40 First Street
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HELP AND SITUATION AND FOR SALE ADVERTISEMENTS

No advertisements accepted unless cash accompanies the order.

Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

Certified marine engineer, 30 years old, desires a position. Has had a technical education; is of good address and will invest a small amount of money if necessary. Make appointment. Address *Marine Engineer,* care of INTERNATIONAL MARINE ENGINEERING, 17 Battery Place, New York.

A CORRECTION.—In the advertisement of the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., in the January issue of INTERNATIONAL MARINE ENGINEERING, the statement was made that Seabury watertube boilers were of "maximum" weight and space. This was, of course, a misprint. The advertisement should have stated that Seabury boilers are of "minimum" weight and occupy minimum space.

NEW POWER LIFEBOAT.—A new power lifeboat has just been placed on the market to meet the requirements of the Board of Supervising Inspectors of the Steamboat Inspection Service. This boat, of steel construction, is 24 feet long with a beam of 7¼ feet and depth of 3¼ feet. It is of the standard double-ended type, and is powered with a two-cylinder Speedway gasoline engine of 12 horsepower installed in a watertight coaming over which a portable cover is provided. A mast and square sail is also provided for steadying in heavy weather. A gasoline tank of 40 gallons capacity is provided. The boat has a carrying capacity of twenty-five persons. This boat was created as a stock type lifeboat by the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., Morris Heights, New York City. The plans have already been approved by the Board of Supervising Inspectors.

COMMERCIAL SHIPBUILDING ON THE HARLEM.—The recent dredging operations on the Harlem River, New York City, have made it possible for the construction and navigation of larger vessels through that waterway connecting the Hudson River with Long Island Sound. As a result the large shipbuilding and repair plant of the Gas Engine & Power Company and C. L. Seabury & Company, Con., at Morris Heights, on the Harlem, is prepared to take full advantage of its building equipment, which can handle wooden or steel vessels up to 300 feet in length and of draft up to 14 feet. Propelling engines of the reciprocating and Curtis turbine type, the Seabury watertube boiler, condensers, steam blower and steering engines, and gasoline generating sets for the auxiliary electric lighting of passenger and commercial vessels and yachts—in fact, vessels complete—are all built at these works.

BABCOCK & WILCOX BOILERS IN THE S. S. *Dirigo.*—The Babcock & Wilcox Company, 85 Liberty street, New York, writes INTERNATIONAL MARINE ENGINEERING as follows concerning the boilers of this ship: "The recently reported sinking of the steamship *Dirigo* off Cape Spencer recalls the fact that this vessel was one of the first operating in Pacific Coast waters to be fitted with a Babcock & Wilcox marine boiler. This was in 1897. Since that time some eighty ships on the Coast have been equipped with these boilers, including, for example, the large passenger and freight ship *Matsonia,* of the Matson Navigation Company, operating between San Francisco and Honolulu. The *Dirigo* was employed in the Alaska trade, plying between Seattle and Alaska ports. While her boiler was one of the earlier marine designs produced by the Babcock & Wilcox Company, her successful operation for so many years in these distant waters has been not only a cause of satisfaction but a matter of considerable engineering interest as well. The question, 'What is the natural life of the Babcock & Wilcox marine boiler?' remains unanswered after seventeen years. The Babcock & Wilcox Company has recently received orders for boilers for the battleship *Mississippi,* for the gunboat *Maumee* and for the revenue cutters *Ossippi, Cherokee* and *Windom,* and for oil-burning apparatus for the *Cherokee* and the battleship *Pennsylvania.* The latter order includes 160 mechanical atomizers of the Peabody design. We have also received an order for boilers for the U. S. S. *Idaho,* now building at the works of the New York Shipbuilding Company, Camden, N. J. This vessel is a sister ship of the *Mississippi.*"

ASHTON Pop Safety Valves — The Quality Standard

ASHTON Steam Gages — The Accuracy Standard

No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

STEAMSHIP FOR SALE

Is classed as Lloyd's A-1; was built in 1912; is 6165 tons deadweight; speed about 10 knots. Full information can be had by addressing "Steamship," care of INTERNATIONAL MARINE ENGINEERING, 17 Battery Place, NewYork.

NOW READY
1914
BOUND VOLUMES
OF
International Marine Engineering

Every month's issue of INTERNATIONAL MARINE ENGINEERING contains much valuable information and should be kept at hand for constant reference.

A bound volume gives you the key to what has been accomplished in the Marine Field during the year. The 1914 (Jan. to Dec.) bound volume costs only $4.00. YOURS is ready. Send for it TODAY.

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17 BATTERY PLACE, NEW YORK CITY

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IMPORTANT ARTICLES

PUBLISHED IN

INTERNATIONAL MARINE ENGINEERING

OCTOBER, 1914.

Geared Turbines for Propelling Vessels. Illustrated.
The New Niclausse High-Duty Marine Boiler. Illustrated.
A Reprieve for the Big Fore-and-Afters.
A New 10,000-Ton Japanese Mail Steamer. Illustrated.
Boston's Square Riggers.
Alteration of Ferryboat Pittsburgh.
The Development of Mechanical Gearing for Marine Turbine Machinery. Illustrated.
The Determination of Dimensions of Cargo Ships. Illustrated.
Steel Storage in Shipyards. Illustrated.
The Triple Screw Liner Statendam.
The Cummings Engine Log System. Illustrated.
A New Type of Internal Combustion Engine. Illustrated.
An Economical Fueling Lighter. Illustrated.
The Mersey Bar Lightship Alarm. Illustrated.
New French Liner for West India Service. Illustrated.
A Diesel-Engined Tank Schooner. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Steam Lighter America.
Inlets Disastrous to Seagoing Steamers.
Letters from Practical Marine Engineers:
- Is the Turbine a Steam Hog?
- Repairs to Feed Water Heater. Illustrated.
- Faulty Designing of Boilers.
- Boilers and Scale.
- Salt in the Fireroom.

NOVEMBER, 1914

The Augusta-Savannah Barge Line. Illustrated.
Twin-Screw Light Draft Steamers for Russia. Illustrated.
Review of United States Army Engineers' Report on Experimental Towboats. Illustrated.
The Towboat Industry on Western Rivers.
Steel Stern-Wheel Towboat Slack Barrett. Illustrated.
Stern-Wheel Boats vs. Screw-Propeller Barges for Shallow River Navigation.
Alterations to Power Plant of Stern-Wheel Towboat Advance.
The World's Largest Ferry Steamer. Illustrated.
Fireproof Towboat Aliquippa. Illustrated.
Hydraulic Suction Dredge No. 103. Illustrated.
Remarkable Accident to Shallow Draft Steamer on South American River. Illustrated.
Stern-Wheel Steamers for South America. Illustrated.
Tunnel-Stern Boats for Macon-Atlantic Navigation Company. Illustrated.
Shallow Draft Passenger Steamer for Florida. Illustrated.
Motor-Driven Stern-Wheel Boat. Illustrated.
Greater Safety and Efficiency in Panelling and Ceiling Passenger Vessels.
Shallow Water Navigation in Distant Lands. Illustrated.
Diesel-Engined Work Boat. Illustrated.
Mietz & Wiess Oil Engine Installations on Commercial Boats. Illustrated.
Car Ferry Henry M. Flagler.
Shop Test of 1,000-Horsepower Marine Diesel Engine. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Oil-Burning Galley Ranges. Illustrated.
- Repairs to a Piston-Rod Gland.
- Propeller Corrosion.
- Repairs to Air Compressor Cylinder on Refrigerating Ship.
- Damage to the Steamship Princess Victoria. Illustrated.
- An Oiler's First Experience at Sea.

DECEMBER, 1914

Tank Ship Construction. Illustrated.
Programme for Naval Architects' Annual Meeting.
S. S. Great Northern and Northern Pacific. Illustrated.
Launching Calculations. Illustrated.
New French Battleships. Illustrated.
Bids for New United States Destroyers.
Repairs to Lake Freighter H. M. Hannah, Jr. Illustrated.
The White Star Liner Brittanic. Illustrated.
Steamship Edward Peirce. Illustrated.
Progress of U. S. Naval Vessels.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Cracked Cylinder Flanges.
- An Interesting Case of Boiler Corrosion. Illustrated.
- Quick Emergency Repairs. Illustrated.
- A Boiler Failure.
- Size of Inboard Bearings, Proper Design of Crossheads and Faults of Lubricating Systems.
- Bearings for Shafts, Etc. Illustrated.

JANUARY, 1915

Editorial Comment.
New United States Revenue Cutters. Illustrated.
Naval Architects' Annual Meeting. Illustrated.
Naval Engineering Ship Models.
Werkspoor Motor Ships in Service.
Tank Ship Construction. Illustrated.
A Lumber Crane of Large Capacity.
Adventures of the Nantucket.
Steamer Francis Hanify. Illustrated.
The U. S. Collier Jason as a Christmas Ship. Illustrated.
Shipbuilding in the United States in 1914.
Economy Talks by "Old Scotch"
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Valve-Spring Jams Piston-Rod. Illustrated.
- Unique Pump Repairs.
- Repairs to a Cracked Cylinder. Illustrated.
- An Unusual Accident to a Safety Valve. Illustrated.
- Experiments in Coal Consumption.
- Saved by Uncle Sam's Bountv.

MARINE SOCIETIES.

AMERICA.

AMERICAN SOCIETY OF NAVAL ENGINEERS
Navy Department, Washington, D. C.

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS
29 West 39th Street, New York.

NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS
29 West 39th Street, New York City.

UNITED STATES NAVAL INSTITUTE
Naval Academy, Annapolis, Md.

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Secretary—B. G. Barnes, 40 Faxon avenue, Quincy, Mass.
Treasurer—P. K. Thurston, Navy Department, Washington, D. C.
Executive Committeeman—H. C. Towle, Haddon Heights, N. J.

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THE STEAMER *Pelham*, of the New York City Department of Health is at the Seabury shipyards at Morris Heights, N. Y., where its old Seabury boiler is being reconstructed.

THE SEABURY BOILER of the yacht *Levanter*, now in winter storage, was recently removed, it being the belief of the owner that a new boiler would be necessary in view of the extended use of the vessel since she was built in 1905. The examination of the old boiler revealed, however, that the tubes and drums were in excellent condition, so that only the ash-pan and casing required repairing or renewal. This has now been done and the boiler reinstalled. The boiler of the yacht *Maspeth* was also recently removed, thoroughly overhauled and reinstalled at the Seabury works.

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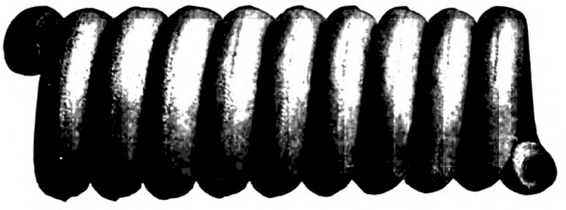

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How much good are latest improvements and latest designs if the packing in the gland "blows" or grips the rod unduly?

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If you have trouble with your packing on outside packed plunger Hot Water Pumps try PEERLESS No. 6 HOT WATER PUMP PACKING which is made of selected cotton duck with the Rainbow compound core. It is adaptable for use on large horizontal plungers of hot water pumps where high pressure and minimum friction are to be considered. It has been used most successfully on some of the largest pumps made.

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TRADE PUBLICATIONS.

"Fibreclad Wire Rope" is the title of a vest-pocket size booklet published by Waterbury Company, 80 South street, New York. "Waterbury Fibreclad wire rope is a wire rope each strand of which is served with the best grade of tarred Russian hemp marline. This fibre covering prevents the chafing and wear of the wire strands during flexing movements, and after being in service a short time this fibre covering packs into the interstices of the strands, resulting in a rope having a smooth cylindrical surface. The tarred marline covering also protects the wire strands of the rope from moisture or water, eliminating the possibility of rust, and also preventing foreign matter, such as coal or cement, dust, gases and fumes, etc., from working through to the wire strands. Unlike manila rope, Fibreclad is unaffected by changes in atmospheric conditions; it will not stretch in dry weather nor contract in wet weather. Manila rope will swell weather nor contract in wet weather. Waterbury Fibreclad rope will not swell or jam nor ice up in freezing weather."

"There is an ABC Engine for Every Steamship." This is the title of an illustrated folder which has been issued by the American Blower Company, Detroit, Mich. "In building and fitting out boats one vitally important problem is to provide auxiliary engines that will be fully as dependable as the main equipment. Just as the strength of a chain is determined by its weakest link so the strength and dependability of a ship's equipment is determined by the strength and dependability of the small auxiliary parts. An auxiliary engine which gives trouble and requires frequent attention is as troublesome as a felon on the end of your finger. ABC self-oiling steam engines make the operation of the auxiliary equipment on a boat almost as automatic and involuntary as raising a hand or a foot. The work is performed quietly and efficiently, but no thought or attention need be given to the means that performs it. On hundreds of the finest vessels on lakes, oceans and rivers throughout the world ABC engines are driving the generators for lighting plants and whistles, blowers and exhausters for mechanical draft and ventilation—are operating centrifugal and plunger pumps, ash hoists, coal conveyors, bucket elevators, etc. They rarely require attention—frequently running an entire season without adjustment and with only one replacement of the oil supply."

Cranes for every purpose are described in a catalogue issued by the McMyler Interstate Company, Bedford, Ohio. An illustration in one of these catalogues shows a shipbuilding crane built for the United States Government at the Bremerton navy yard, Washington.

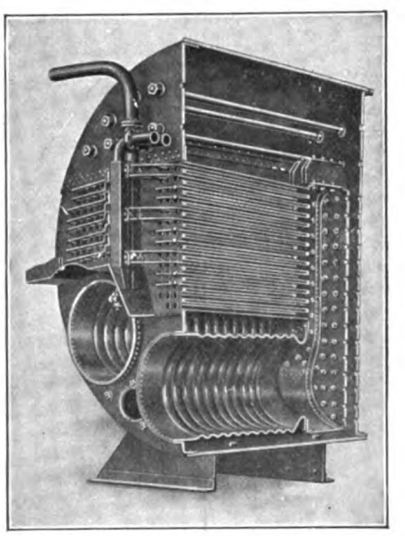
"Centrifugal Pumps" is the title of a 64-page bulletin just issued by The Terry Steam Turbine Company, Hartford, Conn., giving details and data on various turbo-pump applications. The principles of operation and construction of the centrifugal pump are clearly explained, as are the details of the steam turbines which have been successfully used during the past ten years for driving them. Because of the wide latitude of speed possible with the turbine, the unit occupies a much smaller space than would be required for a pump performing the same duty but driven by a reciprocating engine. The range of conditions in this service varies from large volumes of water pumped against low heads, such as circulating water for condensers or for irrigation up to high head work, such as boiler feeding or fire service. The reliability and entire freedom from shut down due to accidents, repairs or packing renewals, have placed the Terry pumping units in a class by themselves. This booklet should certainly be in the hands of those who are interested in any kind of a pumping problem.

"S & K Heat Transmission Apparatus" is the subject of catalogue No. 12, which has just been published by the Schutte & Koerting Company, 1253 North Twelfth street, Philadelphia, Pa. In this catalogue it is stated that the essential feature of the S & K Heat Transmission Apparatus is its high efficiency, which is obtained by the arrangement of the cooling or heating surfaces, and the method used to pass the two mediums through the apparatus, exchanging the heat through the tube walls in counter current. "The thickness of the tubes has a considerable influence on the heat transmission, and the tubes we use have comparatively thin walls, constituting one of the many advantages of our apparatus. Further, this thin tube gives us considerable saving in weight and space. The advantages which can be obtained with our apparatus are so great, that, for instance, with compressor coolers only about one-fourth of the cooling surface is required as compared with other coolers, and for air heaters the surface required is even less, being only about one-tenth that required for other types of coolers. The same is the case with liquid coolers, heaters and condensers."

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

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PEOPLES GAS BLDG., CHICAGO

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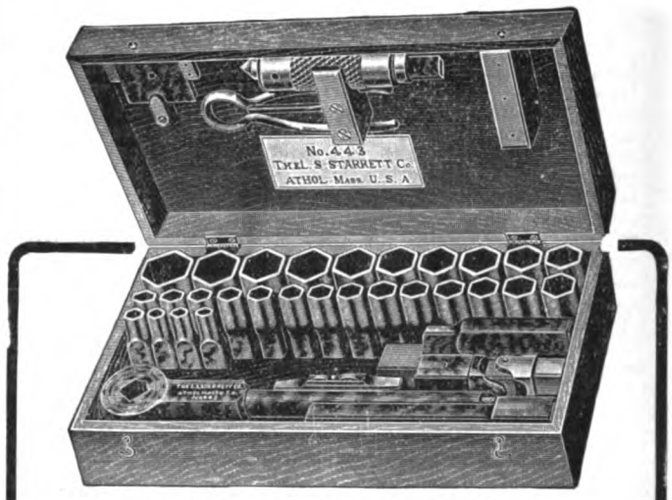
Centrifugal pumps for marine service are described in a bulletin issued by the Alberger Pump & Condenser Company, 140 Cedar street, New York. The catalogue states that in these pumps there are no plungers or pistons to be packed, no cylinders to become scored, and that no relief valve is required.

"Cochrane Multiport Valves," a booklet of 72 pages just issued by the Harrison Safety Boiler Works, Philadelphia, Pa., describes the multiport valves introduced by that concern for back pressure relief and vacuum service, flow service in connection with mixed flow turbines and check valve service with bleeder or extraction turbines. The essential idea of the multiport valve is the use of a number of small disks instead of one large disk, in order to secure greater safety, quietness, lightness of moving parts and tightness. The several disks are each fitted with an independent dash pot held to seat by independent springs, the tension of all the springs being adjusted simultaneously by a pressure plate, the position of which can be changed by means of hand-wheel on the outside of the casing; thus there are no parts directly connected to the disks themselves extending through the casing, hence no possibility of binding, as by over-tightening of glands or of tieing down or over-weighting, the movement of the pressure plate being definitely limited. Another advantage claimed is the ability to adjust the back pressure quickly and easily by changing the position of the pressure plate, which may be done from any distance, as by means of chains or rods. For vacuum service the construction is practically the same, except provision is made for water sealing. For flow service with mixed flow turbines, balance pistons are connected to the disks in such a way that the latter will not open except when the pressure in the exhaust steam pipe is greater than atmosphere. It is thus impossible where one of these valves is used for vacuum from the turbine to back up into the engine exhaust line through leaks or piston rod or valve stem packings. The multiport check valve is designed for use with extraction or bleeder turbines, to prevent reverse flow and consequent over-speeding of the turbine. In addition to full descriptive and tabular matter the book contains numerous diagrams and layouts, also data on the effects of air in condensers and upon turbine performance.

What is said to be the most complete commercial publication devoted solely to centrifugal pumps is being distributed by the De Laval Steam Turbine Company, Trenton, N. J. This book of 298 pages contains over 300 illustrations, including centrifugal pumps for all capacities and heads, and for motor and steam turbine drives, diagrams showing the "characteristics" of such pumps and explaining the relations between impeller blade angles and characteristics, interior views and views of parts showing the construction, views showing the method of manufacture by the use of limit gages and methods of testing, installations of pumps for various services, also numerous illustrations of the De Laval reducing gear employed to allow electric motors, water turbines, steam engines and steam turbines to operate at the most economical speed when driving a centrifugal pump. The text matter is divided into chapters, under such headings as "The Introduction of the Centrifugal Pump and the Work for which it is Adapted"; "Features to be Considered in Selecting Centrifugal Pumping Equipment"; "The Use of the Characteristic Curve"; "Methods of Testing Centrifugal Pumps"; "System of Manufacture for the Production of Interchangeable Parts"; "Details of Design and Construction of Single-stage and Multi-stage Pumps"; "The Speed Question, Particularly Relating to Steam Turbine-Driven Centrifugal Pumps"; "Helical Speed Reducing Gears"; "Motor and Belt Drives"; "High-Duty Steam Turbine-Driven Pumps, as Compared with Reciprocating Pumping Engines for Water Works Service"; "The Adaptation of Pumps for Circulating Condenser Water, Feeding Boilers and Other Steam Power Plant Service"; "Drainage and Irrigation Pumps"; "Hydraulic Pressure and Elevator Pumps"; "Pumps for Marine Uses, Mining Service, Fire Service and Hot Water and Brine Circulation," etc. Tables and charts are given for determining the resistance of pipes and the relation between heads and spouting velocities. The investigation of the pumping problem, together with drawing up of specifications for centrifugal pumps, is also treated at some length. The chapters on "Pump Characteristics" will prove more valuable to the pump user than many of the more technical treatises. The chapter on "Water Works Pumps," showing that under many conditions the centrifugal pump can handle water at a cost 20 to 40 percent lower than it can be handled by reciprocating pumps, because of the lower fixed charges, will be a revelation to many who have not recently given this matter consideration.



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On board ship where machinery is cramped and in dark places you will find this tool a wonder. It will turn out any standard nut or bolt in all sorts of difficult places—places where the ordinary monkey wrench is useless. The ratchet permits rapid action with only a short arc swing. The extension reaches into otherwise inaccessible places.

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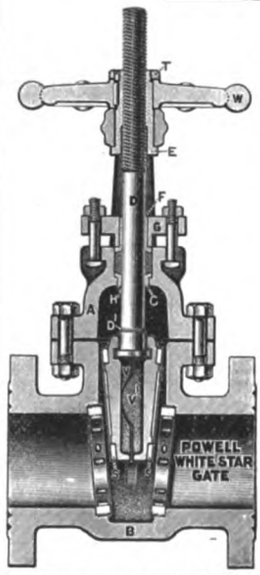
(Especially The "White Star" Valve)



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1. Body and yoke cast of a select grade iron of high tensile strength.
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Use our Waterproof Liquid Glue, or No. 7 Black, White or Yellow Soft Quality for waterproofing canvas covering of flying boats. It not only waterproofs and preserves the canvas but attaches it to the wood, and with a coat of paint once a year will last as long as the boat. For use in combination with calico or canvas between veneer in diagonal planking, and for waterproofing muslin for wing surfaces.

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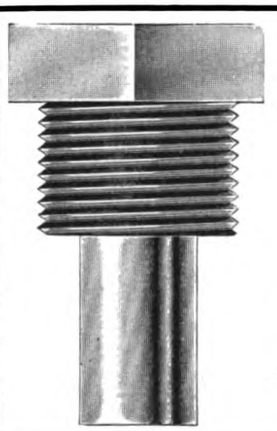

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"The Corrosion of Iron and Steel Pipe as Found in Service" is the title of the leading article in the latest "National" Bulletin, which has just been published by the National Tube Company, Frick building, Pittsburg, Pa. "In addition to the abstract of paper read December 13, 1911, before the New England Water Works Association by Mr. Walker, National Bulletin 10-C contains three other valuable articles on the subject of corrosion, namely: 'Plain Facts About National Pipe for the Plumber and Steamfitter,' 'Relative Merits of Wrought Iron and Steel Pipe,' and 'Further Discussion of the Relative Merits of Wrought Iron and Steel Pipe,' by F. N. Speller, metallurgical engineer, National Tube Company."

J-M Sea Rings, according to an illustrated "Blue Book" (a copy of which will be sent free to any of our readers upon request), eliminate 75 percent of the waste of power caused by rod friction. This blue book is published by the H. W. Johns-Manville Company, Forty-first street and Madison avenue, New York, and a copy should be in the hands of all engineers and shipowners. In this book the statement is made that it is estimated that rod friction, caused by soft packing, consumes at least 5 percent of engine power. J-M sea rings are self-lubricating, and it is stated that they will withstand the highest temperatures and pressures; that they are ideal for superheated steam, high-pressure hydraulics, marine engines, hot and cold water pumps, etc.

The Lunkenheimer "Renewo" valve is one of a large line of valves for all purposes made by the Lunkenheimer Company, Cincinnati, Ohio, and described in Catalogue 50 which the company has just published. In describing this valve the catalogue states that all parts are renewable, including the nickel seat and disc. The seating surfaces are regrindable. The Lunkenheimer seat guard—the tubular extension on the bottom of the disc—materially aids in preserving the seating faces and keeps them clean. The body and trimmings, except the disc, seat and hand-wheel, are made of the original Lunkenheimer steam bronze. This valve is described in a separate "Renewo" booklet.

"Plymouth to the Rescue" is the title of one of the articles in the January issue of *Plymouth Products*, published by the Plymouth Cordage Company, North Plymouth, Mass. The following is a quotation: "Many of our readers will doubtless recall the collision between the United Fruit Company steamship *Metapan* and the American-Hawaiian steamship *Iowan* in Ambrose Channel outside New York harbor early last fall. The picture on our front cover shows the *Metapan* ashore in the channel shortly after the accident, with several wrecking craft alongside. The vessel was patched up, pumped out, and finally hauled into deep water by the Merritt & Chapman Derrick & Wrecking Company. This concern uses Plymouth wrecking cables regularly and its satisfactory experience with them is typical. At this season, wrecking companies, steamship lines and towing concerns all pay particular attention to their cordage equipment. It's a good time to learn the real standing of different makes. Talk with the captains of the different craft and you'll find that in the great majority of cases Plymouth has the call."

"Heating the Largest Pier in the World" is the title of an article which appeared in a recent issue of *Power*, and which has been reprinted in circular form by the B. F. Sturtevant Company, Hyde Park, Boston, Mass. We quote in part as follows: "Commonwealth Pier No. 5, at South Boston, Mass., now under construction by the State of Massachusetts, acting through the directors of the port of Boston, is the largest pier in existence. It is 1,200 feet long, 400 feet wide, and of two-story steel and concrete construction. In addition to a magnificent head-house, containing the offices and warerooms, it has a floor area of about 900,000 square feet, nearly 700,000 square feet being devoted to the handling of freight, which includes the entire first floor and the outer portions of the second floor. The remaining space provides for the passenger service and United States customs inspection. The heating and ventilation of so large a covered area jutting out into the harbor and exposed on all sides, offered at the outset many difficulties to the designers, therefore the layout as installed is essentially an experiment. No one can predict with certainty what the demands on such a heating plant will be when under maximum operating conditions at different seasons of the year. Its peculiar interest lies in the adoption of two systems of heating supplied from the same isolated plant of four large boilers run at low presure. Steam heating by direct radiation is used in the head-house and the offices of the pier, while a system of warming the sheds by steam-heated air under forced circulation by motor-driven fans through sheet metal airways was adopted. An extension of the steam system was also made to piping for melting the snow and ice on the shed roof gutters."

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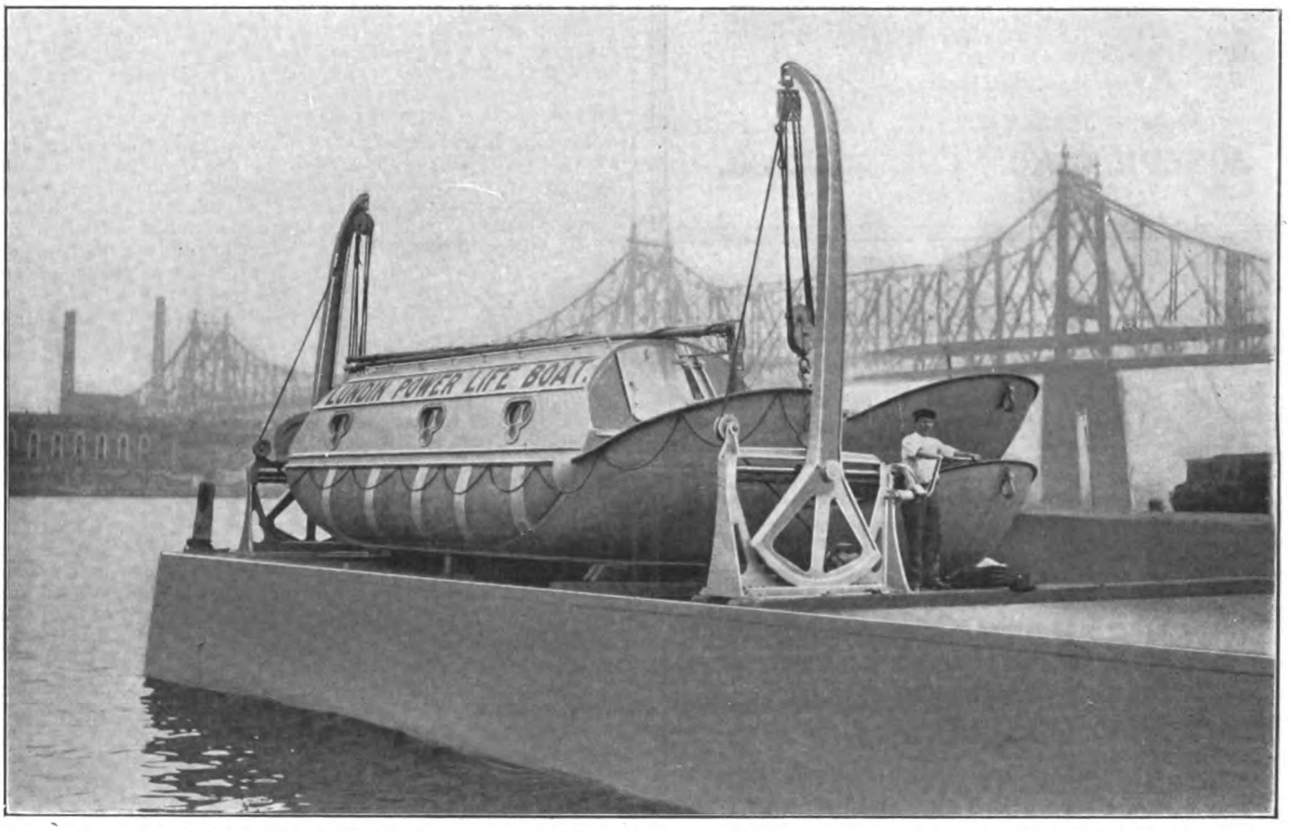
This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

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A full line of marine specialties is carried in stock by the Marine Manufacturing & Supply Company, 158 South street, New York, and is described in a circular which the company will send upon request. Among the items mentioned in this circular are air ports, anchors, ash ejectors, blocks, life boats, buoys, chain, compasses, davits, fire extinguishers, fog horns, marine glue, hoisting winches, lanterns, life preservers, pumps, propellers, quadrants, rudders, steering gears, ship telegraphs, winches, windlasses and many others.

Regrinding valves, especially designed for marine use, are described in a catalogue issued by the McNab & Harlin Manufacturing Company, 55 John street, New York. In designing this line of globe angle, cross and check valves, the company states that it has appropriated all of the essential features which make for efficiency. Many advantages are claimed for M-H regrinding valves, which are manufactured under strictly modern methods and are especially constructed to meet the requirements of government specifications, marine work, locomotive work and the highest class of power plant service.

Some New Steam Turbine Bulletins.—General marine catalogue 16-H, generator bulletin 14-H, and pump bulletin 19-H, have all been recently published by the Terry Steam Turbine Company, Hartford, Conn. Copies of all of these bulletins will be sent to our readers upon request. The Terry Steam Turbine Company states that its turbine is exceptional in its provisions for accessibility, and that it can be completely dismantled without disturbing the alignment of steam and exhaust connections. The casing and bearings are parted horizontally. By merely lifting the covers the entire turbine is open to inspection.

One of the most recent marine applications of the Terry turbine is in running condenser circulating pumps. A large quantity of water furnished at a low head requires a large capacity low-speed pump. The low speed of the Terry turbine permits direct connection. These pumps are installed on the battleships *Arkansas* and *Idaho*. Each unit is of 400 horsepower running at 1,000 revolutions per minute. Marine Bulletin No. 164, published by the Terry Steam Turbine Company, Hartford, Conn., describes the use of the Terry turbine in running these circulating pumps, and also its use for other purposes on board ship, such as for running electric generators, forced draft fans and centrifugal boiler feed pumps.

Calipers and dividers are among the more than 2,000 tools described in Catalogue 20-L published by the L. S. Starrett Company, Athol, Mass. This catalogue has 320 pages and is profusely illustrated. A copy will be sent free to any of our readers upon request.

"Lubrication" is the title of a booklet published quarterly by The Texas Company, 17 Battery Place, New York. The last issue is before us, and contains, in addition to a number of interesting articles on lubrication, a table on the properties of saturated steam and much other matter of interest to engineers and ship owners.

Combinations of the Stow flexible shaft and an electric motor for drilling, grinding, buffing, die sinking, etc., are the subject of Bulletin No. 54 issued by the Stow Manufacturing Company, Binghamton, N. Y. The Stow two-spindle drill is said to be the only tool of its kind on the market. Any of this company's tools will be sent on thirty days' free trial to responsible parties.

The Thermit system for welding rudder posts, stem frames and other sections, is described in full in Marine Pamphlet No. 3425, published by the Goldschmidt Thermit Company, 90 West street, New York. This company has made a great many repairs to vessels on the Great Lakes, on the coasts and on Western rivers, and would be glad to send full particulars upon request.

A catalogue of thermometers has been published by the H. & M. Division of the Taylor Instrument Companies, Rochester, N. Y. The index and recording thermometers described in this catalogue are stated to mark an epoch in the progress of American industrial development that is justly comparable to that of other fields of endeavor. The catalogue states that of all thermometers of all makes combined used in the United States navy more than half are H. & M. "Tycos."

The Shaw electric wharf crane is described in Bulletin No. 134, published by Manning, Maxwell & Moore, Inc., 119 West Fortieth street, New York. This wharf crane travels along the roof of the pier shed and offers no obstruction on the deck area. Freight is delivered to and taken from the inside of the pier shed, thus eliminating handling. The crane transfers the freight between the hatch and the pier in a straight line, and on account of the straight line hoists and transfer comparatively high speeds are practicable.

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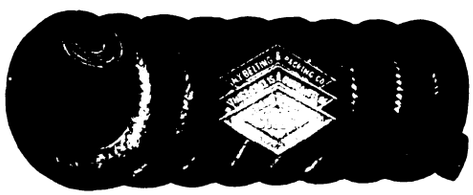
It has stood the test of years and not found wanting



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WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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The "Cascade" boiler circulator and fuel economizer is described in a circular issued by the McNab Company, Bridgeport, Conn. "The McNab Cascade boiler circulator and fuel economizer is an installation that has been appreciated for its real worth. You cannot help but realize that the boiler is worthy of the most careful consideration as to equipment and operation; that is, if the best economy from the plant is to be expected. The boiler room is the most important part in the plant of any steamship, it is also the place where the most money is spent in operation and upkeep. The Cascade was designed to reduce the upkeep and operative expenses of the boiler room, and by the reports from the many installations already made the Cascade has in nearly every case exceeded expectations."

"A New Departure in Mono-Rail Systems" is the title of Bulletin No. 73, just published by the Shaw Electric Crane Company, Muskegon, Mich. "Unlike ordinary traveling cranes, which are strictly limited to one straight run, a monorail track can run from department to department, from building to building, through narrow passages and doorways and around curves. Particularly it can split up into numerous branch tracks, being joined thereto by some form of track switch. The Shaw Electric Crane Company's patented F. T. (fixed tongue) track switch has no moving part. Nevertheless the operator can select his route. The great advantage of this, as compared with the old-fashioned moving tongue track switch, is at once apparent. It does not have to be set for the desired direction of travel; there is nothing about it to set. Consequently there is neither delay nor expenditure of effort for this purpose. Trolleys run through the track switch in all directions without stopping."

A double-piston high-pressure hydraulic pump is described in an illustrated circular published by A. L. Henderer's Sons, 740 Maryland avenue, Wilmington, Del. "This pump has a combination of plungers to give it quick action as well as high duty. While continuous pumping may be had while the two pistons are in action, the principal feature of the combination is the variation of pressures. With a high-duty ¾-inch piston and low-duty 1½-inch piston the time reduction is three-quarters. With a combination of ¾-inch and 1½-inch pistons, 6,000 pounds per square inch can be had from the former and 1,000 pounds from the latter, and it is to be noted that the low-pressure is on the upward stroke of the lever and the high-pressure on the downward stroke. In the illustration the No. 1 piston is the high-pressure. The No. 2 piston is low-presure, and when its capacity is to be exceeded it is disengaged by means of the release wheel No. 3, leaving the piston No. 1 free for higher duty, and which latter is in operation under all working conditions. Complete release of all load pressure is by means of the release wheel No. 4, which controls the return of the liquid to pump's reservoir. The pump, as illustrated, has a stroke of 3 inches, pumps 350 cubic inches per minute; total height, 34½ inches; weight, 195 pounds, with reservoir base of 1,200 cubic inches."

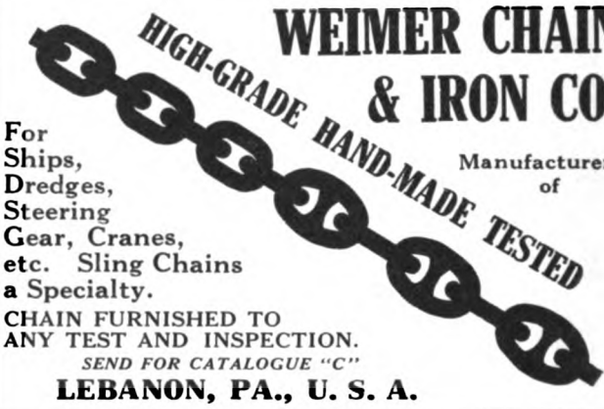
The Columbia automatic davit is described in a circular issued by the Marine Efficiency Company, 17 Battery Place, New York. "As a result of a demonstration of a working model before the Hamburg American Line in Germany last July, we received an order from that company, which, unfortunately, was held up on account of the outbreak of the war a few days later. The Columbia automatic davit consists chiefly of two steel frames, bolted to the deck, in which two quadrant arms freely move. These quadrants rest upon a forwardly, *i. e.*, towards the ship's side, inclined plane, which makes them fall outwards by their own gravity as soon as the brake is released, even at a list of 20 degrees. At the upper end of these quadrant arms adjustable steel hangers are placed, in which the boat rests as soon as it has been raised above deck. The boat is hoisted and lowered by flexible steel cables, running through pulleys at the end of the quadrant arms and the ends of the upright steel frames. Thence they run down to the deck to a double steel drum. As soon as the boat has been hoisted and the quadrants have been brought back against their frames, the boat is securely fastened by the gunwales by one single pull of a lever, while, at the same time, the keel is gripped by and rests on the frame between two eccentrics. As soon as the same lever is raised the boat is instantly freed from all its fastenings and rests then in the steel hangers at the end of the quadrant arms, which, at the same moment, begin automatically to fall outward, swinging the boat over the side of the ship just as soon as the brake of the drum has been released. When the boat has reached the desired position, relative to the distance between the same and the ship's side, it automatically rolls off the hangers and descends to the water's edge. Thus the whole operation, as previously stated, can be easily performed by one single man, and be carried out in less than one minute's time."

ASHTON Pop Safety Valves
The Quality Standard

ASHTON Steam Gages
The Accuracy Standard

No. 16 Style Marine Valve
THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

WEIMER CHAIN & IRON CO.



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A new single valve for pneumatic clipping, calking and flue leading hammers is described in Circular V, published by the Independent Pneumatic Tool Company, Chicago, Ill. In the company's hammers equipped with this valve, balancing is said to be so perfect as to practically eliminate all vibration.

High-grade hand-made tested chain is described in Catalogue "C," just published by the Weimer Chain & Iron Company, Lebanon, Pa. This chain is especially made for ships, dredges, steering gear, cranes, etc. The company makes a specialty of sling clains. Chain is furnished to any test and inspection.

Hydraulic machinery, especially designed for use in ship yards, is described in a catalogue which has just been issued by the Chambersburg Engineering Company, Chambersburg, Pa. Among the machines described in this catalogue are steam hydraulic forging presses, hydraulic riveters, flanging presses, accumulators, cranes, pumps, steam drop hammers and board drop hammers.

Metallic packing for stationary and marine engine rods and valve stems is the subject of an illustrated circular which has just been issued by the United States Metallic Packing Company, 429 North Thirteenth street, Philadelphia, Pa. "This is a double packing. The inner or upper set of babbitt metal rings does most of the work. It is separated from the rest of the packing by a dividing piece; outside or below this comes the second set of rings. Should any water or steam leak through the first set of rings, it is caught by the second set and can be drained off; also, should the first set of rings wear out, the second set is already on the rod to take up the work of the first set. With this packing we furnish all parts shown, including gland, with the exception of stud bolts. The principle of this packing is that the soft metal rings are forced by the steam pressure into the vibrating cup and against the rod or stem. Flexibility, the strong point in our packing, is attained by the combination of the ball joint with the sliding face of the vibrating cup. This enables the packing to accommodate itself to rods running out of line without in any way impairing its efficiency or increasing friction. It cannot cut, score nor heat the rod. This type of metallic packing can be easily applied in a short time by any engineer or machinist following the instructions sent by us with each set."

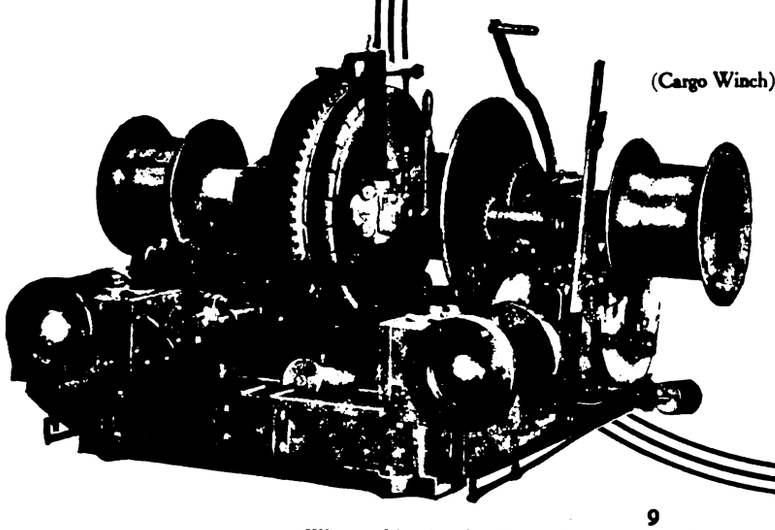
The American "Ideal" steam trap is described in an illustrated "Trap Data Booklet," published by the American Steam Gauge & Valve Manufacturing Company, Boston, Mass. In this booklet it is stated that the ideal way to specify steam traps is to know the size orifice in the trap valve. This is what governs the capacity, because no more condensation can pass through the trap than can pass through the valve. This information is published in the booklet mentioned.

Duplex block metallic packing is described in a circular which has just been issued by the United States Metallic Packing Company, 429 North Thirteenth street, Philadelphia, Pa. "This packing is in two independent sections, separated by the dividing piece, the upper section, consisting of white metal rings with vibrating cup, follower, etc., being in the stuffing-box, and the lower section, consisting of blocks with horn rings, sliding plate, ball joint, etc., being contained in the gland. The upper or inner set of packings consists of three babbitt metal rings, each in three parts, contained in the vibrating cup. There is a ground joint between the flat face of the vibrating cup and the dividing piece. Above the babbitt metal rings come the follower and the upper spring bushing in pockets, in which are contained the upper follower springs, and then in the bottom of the stuffing-box the preventer, varying in length according to the depth of the box. As the dividing piece is bolted to the face of the stuffing-box independently of the gland which contains the lower or outer set of packing, the blocks in the lower set may be renewed or any other necessary work done to same without taking down the upper set of packing or in any way disturbing it. The lower or outer section of the packing consists of eight blocks, babbitt lined, which are held in rings having horns holding springs. The packing blocks are put together in sections, four blocks to a section. Each section is composed of two working blocks and two guide blocks. The joints between the blocks in each section are at right angles to each other, thus breaking joint. Small follower springs in pockets are also used behind the follower plate. The combination of the sliding plates and ball ring having ground surfaces allows for the movement of rods out of line. The spring pressure is so regulated as to merely hold the parts in place when the engine is running without steam. A hole is drilled in the gland for a nipple and globe valve so that condensation can be drained off."

Built on duplicate part system, insuring absolute fit and prompt shipment of spare parts.

Lidgerwood Ships Winches

Handle cargo rapidly, economically, quietly and saves ship's time in port.



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are thoroughly well built and of Standard design.

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The J-M Sea Ring Blue Book is published by the H. W. Johns-Manville Company, Forty-first street and Madison avenue, New York. The J-M Sea Ring is stated to be a packing that prevents power waste. It is said to be scientifically designed to eliminate the constant drag on the rods which is said to be caused by some packings. "Instead of the packing being made tight by gland pressure, it is held against the rod by the pressure of the fluid, which is packed, actuating the lip of the ring. Thus J-M Sea Rings are an automatic self-adjusting packing, the pressure on the rod always being in proportion to the tendency of leakage, and during the part of the stroke on which there is no pressure there is no friction."

Fuel-oil and gas-driven compressors are described by the Chicago Pneumatic Tool Company, 1026 Fisher building, Chicago, Ill., in a bulletin the company has just published. "While the success which our gasoline-driven air compressors have enjoyed for the past ten years has been extremely gratifying, we have appreciated the fact that power ends designed to utilize low-grade fuel oils would greatly increase the economy and sphere of usefulness of such machines. Recognizing this demand we have employed our exceptional facilities and wide experience in the painstaking development of a new line of fuel oil-driven compressors that are now offered with the positive assurance that they are unique. No compressors of a comparable type have ever been marketed. All of the essential features of our gasoline-driven units are embraced in the present construction, but, in addition to the utilization of our distinctive fuel oil power ends, extensive and important modifications have been made wherever our experience and knowledge of service conditions have demonstrated that such were desirable. Delicate mechanisms and adjustments cannot be successfully employed on compressors for field work, and the simplicity of our Class N-SO machines should be investigated to be fully appreciated. Unquestionable reliability, sustained low operating costs, indestructible flat disc air valves, totally enclosed construction and efficient automatic lubrication and regulation of these compressors are the features which combine to give them an individuality that justifies their selection by discriminating purchasers. Class N-SO compressors are made in four standard strokes, 8, 10, 12 and 14 inches, with air and power cylinders, capacities, speeds and general dimensions as given in the following tables. Any of these may be arranged for portable, skid-mounted (semi-portable) or stationary use."

BUSINESS NOTES

THE TERRY STEAM TURBINE COMPANY, Hartford, Conn., has appointed Mr. Earl F. Scott representative for the State of Georgia, with offices at 702 Candler building, Atlanta. The Terry Steam Turbine Company's Pittsburg office, in charge of Mr. H. A. Rapelye, is now located at 1624 Oliver building.

C. M. LANE LIFEBOAT COMPANY, 246 Hudson street, Brooklyn, N. Y., exhibited at the recent Motor Boat Show in New York a 24-foot metallic power lifeboat with a 14-horsepower Frisbie motor in it, fully equipped for ocean service and ready to put on board the steamship, inspected and passed by the United States Steamboat Inspection Service.

THE KERR TURBINE COMPANY, Wellsville, N. Y., has appointed Mr. John S. Huey, 418 Hibernia Bank building, New Orleans, La., as the company's district sales agent for Louisiana and Southern Mississippi. The Kerr Turbine Company has appointed Mr. W. D. Story its representative in Toronto, Can., with offices in the Kent building. The Kerr Company has also appointed Mr. Benjamin G. Fernald New York district manager, with offices in the Singer building annex, 95 Liberty street.

A COURT DECISION.—The patent suit brought against the B. F. Sturtevant Company, Boston, Mass., by the Sirocco Engineering Company, which has been in the courts for the past six years, has just been decided by the United States Circuit Court of Appeals for the Second Circuit in favor of the Sturtevant Company. It was claimed that the Sturtevant multivane fan infringed the Sirocco Company's patents, and in the lower court this claim was sustained. The Court of Appeals, however, reversed the former decision and held that there was no infringement. The Court of Appeals further decided that the Sirocco patents in suit were void in view of the development of the fan building art prior to the alleged inventions upon which these patents were based. As there are probably more multivane fans in use than any other make the monetary consideration at stake was large.

A Packing that Prevents Power Waste

You can't get full efficiency—real work for every ounce of power generated—if you use ordinary packings in the stuffing box. Ordinary packing depends upon gland pressure to hold it so tight as to prevent leakage. At all times it must be kept tight enough to hold the greatest pressure it must operate against—and just a little tighter than necessary to be sure leakage is impossible. Therefore, ordinary packing acts as a brake *all* the time in order to be equal to the demand of a *very small part* of the time—causing a continuous and tremendous power waste.

J-M SEA RINGS

are scientifically designed to eliminate this constant drag on the rods Instead of the packing being made tight by gland pressure, it is held against the rod by the pressure of the fluid which is packed actuating the lip of the ring. Thus J-M Sea Rings are an automatic, self-adjusting packing, the pressure on the rod always being in proportion to the tendency of leakage—and during the part of the stroke on which there is no pressure there is no friction.

Easily applied because moulded to fit the rod and stuffing box for which they are intended. Suitable for steam, air and water service.

Write our nearest branch for our book of facts and figures—the "J-M Sea Ring Blue Book."

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IMPORTANT ARTICLES

PUBLISHED IN

INTERNATIONAL MARINE ENGINEERING

NOVEMBER, 1914

The Augusta-Savannah Barge Line. Illustrated.
Twin-Screw Light Draft Steamers for Russia. Illustrated.
Review of United States Army Engineers' Report on Experimental Towboats. Illustrated.
The Towboat Industry on Western Rivers.
Steel Stern-Wheel Towboat Slack Barrett. Illustrated.
Stern-Wheel Boats vs. Screw-Propeller Barges for Shallow River Navigation.
Alterations to Power Plant of Stern-Wheel Towboat Advance.
The World's Largest Ferry Steamer. Illustrated.
Fireproof Towboat Aliquippa. Illustrated.
Hydraulic Suction Dredge No. 103. Illustrated.
Remarkable Accident to Shallow Draft Steamer on South American River. Illustrated.
Stern-Wheel Steamers for South America. Illustrated.
Tunnel-Stern Boats for Macon-Atlantic Navigation Company. Illustrated.
Shallow Draft Passenger Steamer for Florida. Illustrated.
Motor-Driven Stern-Wheel Boat. Illustrated.
Greater Safety and Efficiency in Panelling and Ceiling Passenger Vessels.
Shallow Water Navigation in Distant Lands. Illustrated.
Diesel-Engined Work Boat. Illustrated.
Mietz & Wiess Oil Engine Installations on Commercial Boats. Illustrated.
Car Ferry Henry M. Flagler.
Shop Test of 1,000-Horsepower Marine Diesel Engine. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Oil-Burning Galley Ranges. Illustrated.
- Repairs to a Piston-Rod Gland.
- Propeller Corrosion.
- Repairs to Air Compressor Cylinder on Refrigerating Ship.
- Damage to the Steamship Princess Victoria. Illustrated.
- An Oiler's First Experience at Sea.

DECEMBER, 1914

Tank Ship Construction. Illustrated.
Programme for Naval Architects' Annual Meeting.
S. S. Great Northern and Northern Pacific. Illustrated.
Launching Calculations. Illustrated.
New French Battleships. Illustrated.
Bids for New United States Destroyers.
Repairs to Lake Freighter H. M. Hannah, Jr. Illustrated.
The White Star Liner Brittanic. Illustrated.
Steamship Edward Peirce. Illustrated.
Progress of U. S. Naval Vessels.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Cracked Cylinder Flanges.
- An Interesting Case of Boiler Corrosion. Illustrated.
- Quick Emergency Repairs. Illustrated.
- A Boiler Failure.
- Size of Inboard Bearings, Proper Design of Crossheads and Faults of Lubricating Systems.
- Bearings for Shafts, Etc. Illustrated.

JANUARY, 1915

Editorial Comment.
New United States Revenue Cutters. Illustrated.
Naval Architects' Annual Meeting. Illustrated.
Naval Engineering Ship Models.
Werkspoor Motor Ships in Service.
Tank Ship Construction. Illustrated.
A Lumber Crane of Large Capacity.
Adventures of the Nantucket.
Steamer Francis Hanify. Illustrated.
The U. S. Collier Jason as a Christmas Ship. Illustrated.
Shipbuilding in the United States in 1914.
Economy Talks by "Old Scotch"
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Valve-Spring Jams Piston-Rod. Illustrated.
- Unique Pump Repairs.
- Repairs to a Cracked Cylinder. Illustrated.
- An Unusual Accident to a Safety Valve. Illustrated.
- Experiments in Coal Consumption.
- Saved by Uncle Sam's Bountv.

FEBRUARY, 1915

Self-Unloading Freight Steamer Huron. Illustrated.
Salvage Work on the Empress of Ireland. Illustrated.
Electricity on Board Ship.
Motor Ship Tongking. Illustrated.
New Ore Unloading Plant at Huron. Illustrated.
New Freight Carrying Steamer Van Hogendorp. Illustrated.
Tank Ship Construction.
Dyson Chart System of Propeller Design. Illustrated.
Trials of the Submarine Tender Fulton. Illustrated.
New Sea-Going Steel Tug. Illustrated.
Congestion of Freight at New York Piers. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- The Use of Silver Nitrate.
- Propeller Blade Layout. Illustrated.

Re-Floating the Steamship Zeeland by Compressed Air.

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Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

INSTITUTE OF MARINE ENGINEERS, INCORP.
58 Romford Road, Stratford, London, E.

AT THE ANNUAL MEETING of the American Vulvanized Fibre Company, Wilmington, Del., held January 6, the following officers were elected: President, George K. Parsons; vice-president, Henry M. Taylor; second vice-president, Collin C. Bell; secretary, Claude W. Sutton; treasurer, George B. Miller; general sales manager, William A. Jordan.

PERCENTAGE OF EYE ACCIDENTS HIGH.—In a recent report of the Industrial Commission of Wisconsin they show that over 70 percent of all the injuries to workmen caused by chips, nails and other small objects affect the eyes. Out of a total of 346 cases reported, 32 men lost the sight of one of their eyes entirely, 217 had eyes injured, 75 suffered from lacerations, 7 from impaired sight and 15 from bruises. The causes of the above injuries were as follows: Two hundred and eighty-three were hit by chips, 14 by nails, 4 by stone from blasts, 3 by bursting water-glasses, and 42 by other small objects. This Commission further states that of the 70 percent it is safe to say that fully three-fourths of these eye injuries could be avoided by the wearing of goggles, and, in fact, within the past year many Wisconsin plants have adopted the use of goggles, and as a result eye injuries have been almost entirely eliminated. This is one of several items recently called to our attention by T. A. Willson & Co., Inc., Reading, Pa., who specialize in the manufacture of industrial protection glasses for workmen.

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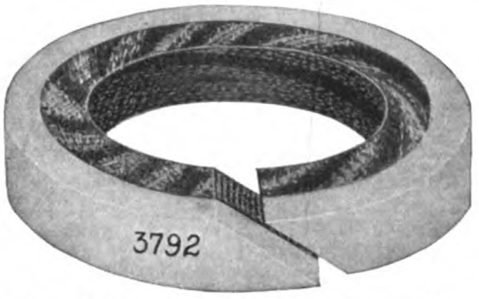
"IT'S A TIGER OF A RING"



(Before being lubricated with graphite.)

That is what an Engineer said when asked how he liked our

No. 3792 AMMONIA RING

This Engineer had considerable trouble keeping glands tight until he tried this special purpose packing.

Striped like a Tiger.

Holds like a Tiger.

Try this good packing in one gland is all we ask, for we know we have something you will appreciate.

If your dealer does not keep the "Tiger" send to us direct.

AND HERE'S SOMETHING ELSE FOR YOUR ATTENTION

No. 216 AMMONIA CONDENSER GASKET

One of our Salesmen said

"I can sell anything that will save the Engineer trouble and expense."

He was talking at the time of our No. 216 AMMONIA CONDENSER GASKET **which is selling in large quantities.**

This Salesman had hustled and deserved some credit, but as a matter of fact most of his orders were re-orders on the strength of what the Engineers had found this No. 216 capable of.

NO. 216 AMMONIA CONDENSER GASKET **is a specially made rubber compound that resists Oil and Ammonia combined, even at high temperatures.**

No wonder he could sell them.

Remember you are asked to try these rings yourself. Send for a sample and literature.

PEERLESS RUBBER MANUFACTURING CO.

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TRADE PUBLICATIONS.

AMERICA

Seabury marine steam engines for commercial and pleasure craft are illustrated and described in a new folder, No. 11-A, just issued by the Gas Engine & Power Company and Chas. L. Seabury & Co., Morris Heights, New York City. This folder, which is supplementary to the recently-issued Stationary and Marine Boiler Catalogue No. 10-A, shows that the Seabury engines of the reciprocating type are built compound from 12 to 90 horsepower and three-cylinder triple expansion in two sizes for vessels of speed, namely, 1,200 and 2,400 horsepower. The folder calls attention to numerous other products of that company, and particularly to the gasoline electric generating sets for regular or emergency lighting, such auxiliary lighting systems by the revised steamship inspection regulations effective July 1, 1915. Copies mailed upon request to the sales manager.

"Oil-Less Bearings" is the title of an illustrated 48-page catalogue which has just been issued by the Graphite Lubricating Company, Church and John street, Bound Brook, N. J. "There is a great distinction and a very great difference between a so-called 'graphite-lined' bushing and a 'Bound Brook' bushing. A graphite-lined bushing may consistently be anything of which a composition can be made and which will show a large 'percentage of carbon'; for instance, if you start to analyze graphite it will show you a greater or lesser degree of 'carbon.' Bituminous coal will undoubtedly show you the same ratio of 'carbon,' but it does not in any sense of the word mean that bituminous or anthracite coal or coke are good lubricants. One grade of graphite may make a good crucible, another grade may make a good lead pencil, but a lubricating graphite is a very different proposition. To the inexperienced, graphite is graphite, but our experience, covering more than a quarter of a century, teaches us the kind and grade of graphite that is best suited to the purpose of making a self-lubricating bearing. Do not specify a 'graphite lined bushing.' Remember, a 'graphite lined bushing' may be filled with coal or coke, while a 'Bound Brook' bushing is constructed of the finest bronze obtainable, and the recesses are filled with the best lubricating graphite. It is the original 'Oil-Less' graphite bushing, and the only one which stands the tests of time, and is absolutely and fully guaranteed."

The Reilly multi-screen feed-water filter and grease extractor is described in Bulletin 607, published by the Griscom-Russell Company, 2121 West Street, building, New York. This device "guarantees clear water for your boilers. Its filtering surface is five hundred times the cross sectional area of the feed pipe, and the efficiency of the filter depends upon the extent of the filtering area. All filters have to be cleaned. The Reilly multi-screen has a surface flow for clearing oily scum, a bottom blow for clearing sediment, and, when necessary, the filtering cartridges can be removed through a convenient manhole without disturbing pipe connections."

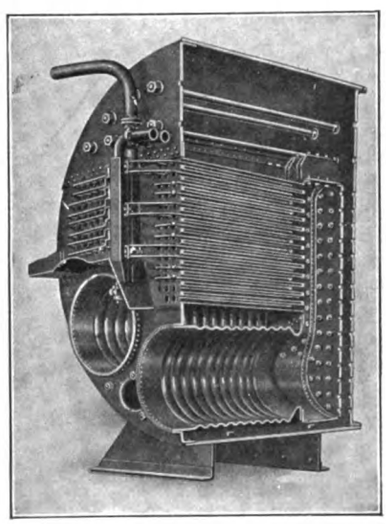
The use of Otis inclined elevators at steamship docks and railway terminals is entered into in detail in an "Elevator Booklet" just published by the Otis Elevator Company, Eleventh avenue and Twenty-sixth street, New York. "Let us consider the advantage on docks and railroad terminals of such an equipment as the Otis inclined elevator to move package freight between levels. This one investment calling for a few hundred dollars can readily be regarded as nothing more than a number of investments of a few dollars, each returning an unsually large and a perpetual saving—a saving of time and labor and of money. We ask the privilege of showing you with facts and figures based on actual experience what the Otis inclined elevator can save you."

Universal electric drills, operating on direct or alternate current, are described in Bulletin E-35, published by the Chicago Pneumatic Tool Company, Fisher building, Chicago, Ill. "We present herewith our line of universal electric drils which have the unique property of being operated interchangeably on direct current or single-phase alternating current of 60 cycles or less. This feature is of great value to contractors or others who may have occasion to do work in various localities which may be supplied with either current. The universal type of drill, operating on direct or alternating current, was introduced by us several years ago, and has met with general favor. It operates at practically the same speed on either direct or alternating current of the same voltage, and has a very high efficiency on either current. The speed depends upon the load applied to the tool and is irrespective of the frequency of alternating current. This type of tool is fully covered by letters patents granted February 18, 1913, and users of Duntley universal electric tools are fully protected. The new line of tools herein described is far in advance of anything heretofore offered and covers a wide range of sizes."

SCHMIDT FIRE TUBE SUPERHEATER
For MARINE BOILERS

Saves from 10% to 25% of fuel per unit of power developed.

Reduces coal bunker requirement, making possible increased revenue cargo with the same draft.



Increases power output of a given marine power plant from 10% to 25%.

Its construction provides easy access for maintenance or removal.

Adaptable to either new or existing boilers of the fire tube type with no change in their design or construction.

SEND FOR OUR CATALOGUE [A]

LOCOMOTIVE SUPERHEATER COMPANY, 30 CHURCH STREET, NEW YORK
PEOPLES GAS BLDG., CHICAGO

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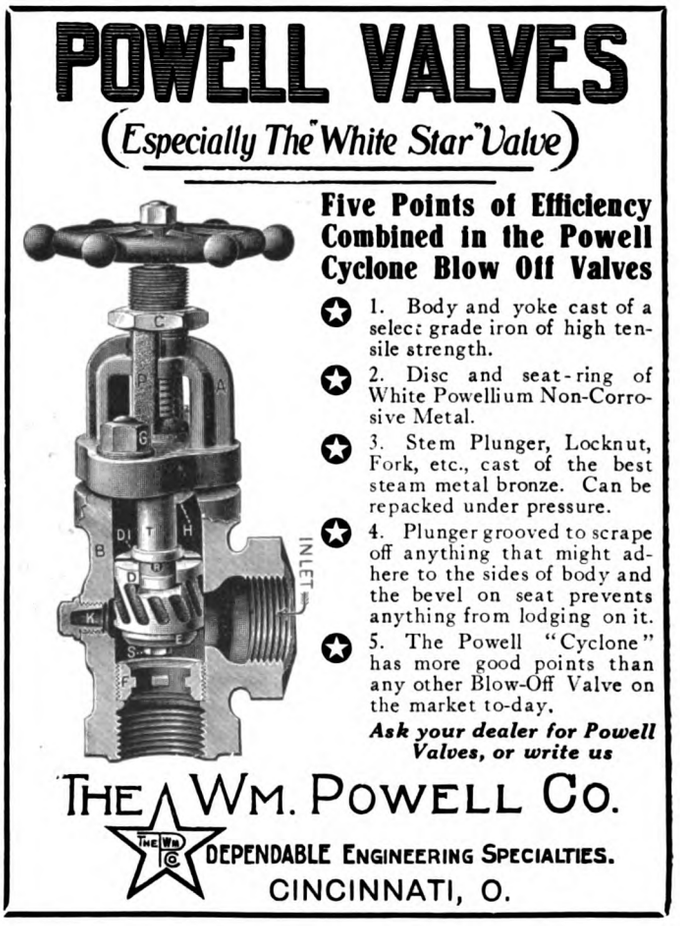
"The Only Propeller Thrust for High Speed" is the claim made in a circular published by the Bantam Anti-Friction Company, Bantam, Conn. If you are interested in propeller thrust send for a copy of the circular.

"The Chambersburg Hammer" is the title of Catalogue No. 66, just published by the Chambersburg Engineering Company, Chambersburg, Pa. This is a handsomely printed catalogue, profusely illustrated with half-tone engravings. The preface reads, in part, as follows: "The hammers herein illustrated and described are built from the largest and most complete line of patterns for tools of this character upon the market. We make a specialty of single and double-frame steam hammers, both guided ram and guided rod types, steam drop hammers and board drop hammers, and have at all times a large number of machines finished for immediate delivery and under construction for early shipment. Our unequaled facilities enable us to produce in the least time after receipt of order hammers of any size or design. Particular care is directed to the production of all the material used in their construction. Special tools have been installed for their manufacture; all parts are made to gage and are interchangeable, both in design and manufacture. Our continuous experience of over thirty-five years in designing and building hammers warrants us in assuring our customers of most modern and approved design and construction. We offer our product as the best and warrant it as such."

Heavy crude-oil engines for all marine work are described in a circular just published by Bolinders Company, 30 Church street, New York. "The Bolinder engine is a two-cycle, hot bulb, heavy oil engine, which runs on heavy crude or residue fuel oil, also on kerosene. The working cycle is briefly as follows: The engine works on what is known as the two-cycle principle, meaning there is one impulse to each revolution. When the piston at the end of its outward stroke is moving in towards the ignition chamber the necessary air for scavenging and combustion is drawn through the air valves into the enclosed crank case, and at the same time the air in the cylinder is being compressed. When the piston has reached its extreme inward position, a certain amount of oil is injected into the ignition chamber through the nozzle and the fuel charge ignites, resulting in the expansion of the gases driving the piston outward towards the shaft. During this outward stroke of the piston the air in the crank case is compressed. As the piston nears the end of its stroke the exhaust port opens, and immediately afterwards the inlet air port. The burnt gases escape through the exhaust port, while the compressed air in the crank case entering the cylinder by the port completes the scavenging work, and furnishes the cylinder with air necessary to make up the next charge in the cylinder. The marine engines are made in two different types—the one, direct reversible, working a solid propeller, the other working a propeller with reversible blades."

Hydraulic accumulators are described in Catalogue 84, published by the Watson-Stillman Company, 50 Church street, New York. "In this catalogue are shown a variety of types of accumulators, each of which is the result of attempting to fill the requirements of location or working conditions. An accumulator should bear the same relation to an hydraulic system that the balance wheel does to an engine; that is, to receive the excess of pump delivery above the momentary demand of the machine, and deliver it when the demand is above the normal. In size the ram should be large enough, particularly in the weighted types, to prevent a high speed in descent, as the inertia with quick changes in speed throws excessive stresses upon the entire system as well as over-pressure upon the work. The type of accumulator desirable for any particular location is to be decided largely by the working conditions and character of the foundation permissible, while the size will have to be determined by the number of machines and the sizes of the cylinders to be filled and particularly the number to be filled at one time. The working pressure of the system will influence somewhat the selection of the type as well as the size and weight of the parts. The pump should have sufficient delivery to prevent the descent of the ram (or cylinder) more than one-half or two-thirds of its maximum movement, but not be so large as to be out of action a large proportion of the time unless the accumulator is of a pump governing type or variation in power required to operate it inconsequential. In large systems it is frequently desirable to have the accumulator perform both its normal function for one pump and act as a governor to a second or third pump, which can be done easily. In the majority of cases where more than one press is to be used with one pump it is desirable to have an accumulator, as it will soon pay for itself in increased efficiency of press outfit."

Don't Guess Any More!
With this instrument you can accurately count the revolutions of any revolving part.
For speed tests on engines, generators, turbines, or any machinery, nothing is so reliable and accurate as the
Starrett Speed Indicator
It indicates the highest speed without heating. Small and convenient. Three styles — $1.00, $1.50, and $3.00.
Send for free catalog No. 20 L and see what style you need.
The L.S. Starrett Co.
World's Greatest Toolmakers
Athol, Mass.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(Especially The "White Star" Valve)
Five Points of Efficiency Combined in the Powell Cyclone Blow Off Valves
1. Body and yoke cast of a select grade iron of high tensile strength.
2. Disc and seat-ring of White Powellium Non-Corrosive Metal.
3. Stem Plunger, Locknut, Fork, etc., cast of the best steam metal bronze. Can be repacked under pressure.
4. Plunger grooved to scrape off anything that might adhere to the sides of body and the bevel on seat prevents anything from lodging on it.
5. The Powell "Cyclone" has more good points than any other Blow-Off Valve on the market to-day.
Ask your dealer for Powell Valves, or write us
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Protect Your Bearings with

DIXON'S FLAKE GRAPHITE

Mixed with oil or grease, the fine flakes go to every part of the bearing, building up a lubricating film of pure, unctuous graphite which prevents metal-on-metal contact, cuts down friction, saves power, and minimizes wear. There can't be a hot bearing where **Dixon's Flake Graphite** is used.

Send for "Valuable Graphite Products," Booklet No. 75-C.

Made in JERSEY CITY, N. J., by the

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Established 1827

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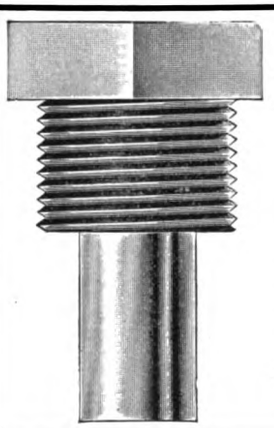
PITTSBURGH PA.



MARINE FUSIBLE PLUGS

OIL CUPS
LUBRICATORS
WATER GAUGES
ENGINE AND BOILER SUPPLIES

W. P. PHILLIPS BRASS WORKS

Sudbury St., BOSTON, MASS.

Send for Catalogue

The Ellicott Machine Corporation, Baltimore Md., builders of ships and engines, hydraulic dredges and hoisting machinery, has issued an interesting catalogue, a copy of which will be sent free to any of our readers upon request.

"Holzapfels Compositions for Iron and Steel Vessels' Bottoms" are the subject of a circular which has just been issued by Holzapfels American Composition Company, Welles building, 18 Broadway, New York. This catalogue states that over 18,000,000 gross tons of shipping are coated annually.

The "Pneumercator" is described in a circular just published by the Pneumercator Company, 118 Liberty street, New York. Referring to the Pneumercator Model D-1, the catalogue states that it is guaranteed to indicate the forward and aft drafts of a vessel and to register the mean draft and corresponding tons displacement. Model T-1 is guaranteed to measure the depth and quantity of fuel in the bunker tanks. The latter model is the navy type, and is installed on the U. S. ships *New York, Oklahoma, Pennsylvania* and many others.

Electric fans are described in a vest-pocket size booklet just issued by the Sprague Electric Works, 527 West Thirty-fourth street, New York. "Sprague fans are again offered to the discriminating purchaser, for the season of 1915, with the firm conviction that they will satisfactorily pass the test imposed by long and continuous service. The complete assortment of types which we are prepared to furnish will be found listed and briefly described on the following pages, and we believe that, from the diversity of styles, a suitable fan can be selected to fill any requirement."

Nicholson ship speed recorders are described in illustrated Catalogue M, just published by the Nicholson Ship Log Company, Cleveland, Ohio. The catalogue states that the Nicholson ship speed recorder is a radical departure from all other types of nautical measuring devices. In addition to giving the mileage sailed it shows the speed per hour on a dial and records this speed on a chart for every minute of the trip. Nicholson recorders are made for every type of vessel. Extreme simplicity of operation is stated to be one of their leading features. Some of the largest merchant ship owners in the world use Nicholson recorders exclusively. They are also used extensively on ships of the United States and other navies. The U. S. S. *Wyoming,* for instance, is equipped with two Nicholson ship recorders.

The Federal Composition & Paint Company, Ltd., manufacturers of marine paints and composition for all classes of vessels (Von Höuveling process), 17 Battery Place, New York, has issued an illustrated catalogue in reference to its marine paints. "In their manufacture, require an experience widely different than that acquired in the manufacture of ordinary house paints. The process of decay and destruction to which they are constantly subjected requires to be provided against in a vastly different manner from ordinary paints. Special adaptability is required in these paints, much more so than in the usual paints, and special experimental experience is needed in order to produce anything of real value. We are marine paint specialists of long experience, having at our command every facility for the most searching investigation and experimental tests which have enabled us to make our products purely and specially to marine uses. Each particular requirement of the many varied marine uses for paint has been exhaustively studied and special paints produced which are the standard the world over for each particular requirement."

WOLVERINE for MARINE SERVICE

THE MOTOR WITH THE BORE and STROKE

FUELS { KEROSENE (PARAFFIN)
GASOLINE (PETROL)
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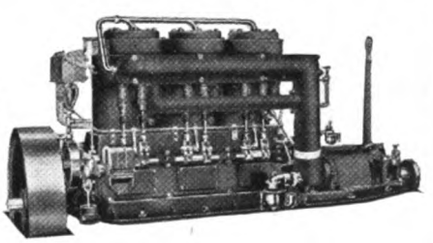

WOLVERINE MOTOR WORKS BRIDGEPORT CONN U.S.A.
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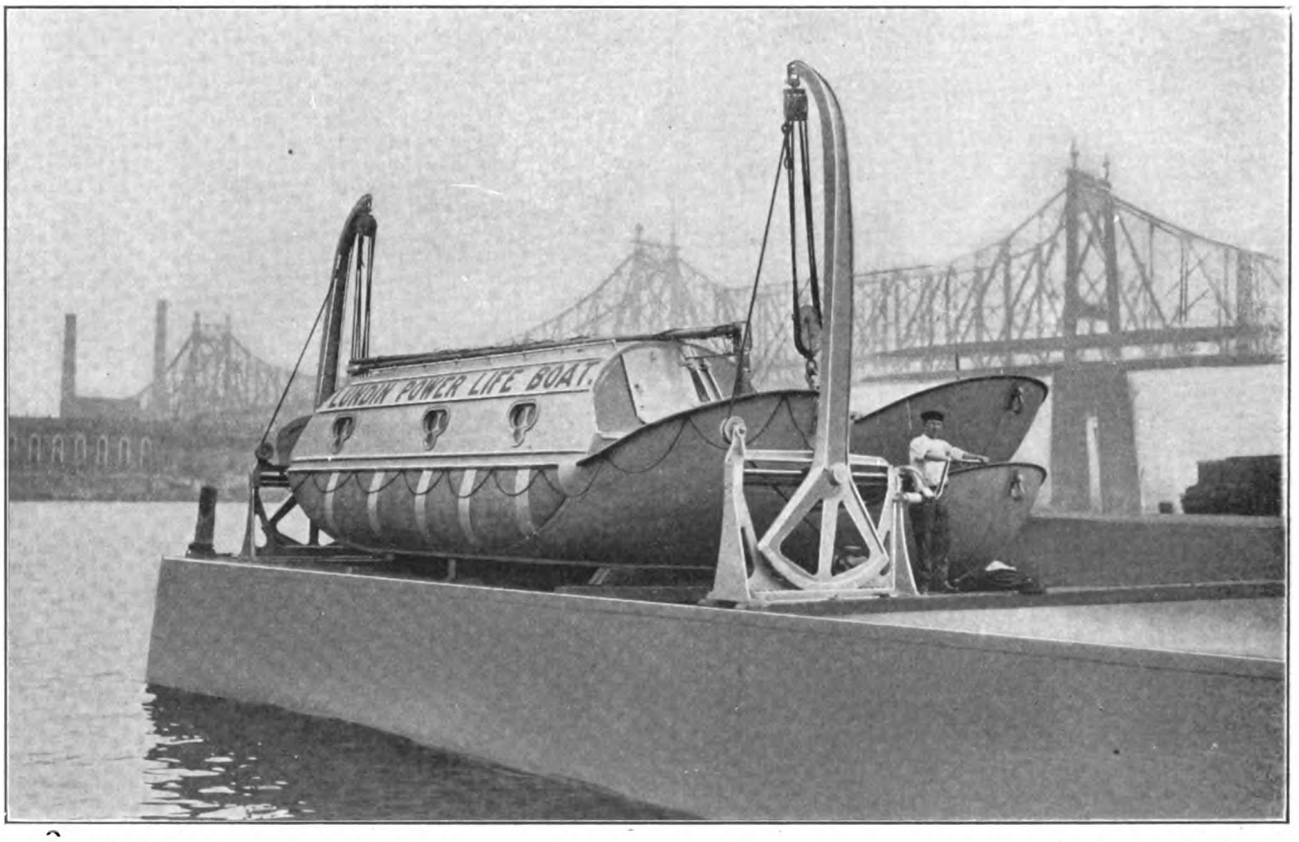
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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Six hundred files, from actual photographs, are shown in a catalogue published by the Nicholson File Company, Providence, R. I. This is a valuable book to all users of files, and a copy will be sent free to any of our readers who will ask for it. "There are thousands of uses to which files are put, yet there is a Nicholson file designed to meet your every need."

The Lansing sling load truck is described in a circular published by Lansing-Company, 288 West street, New York. The circular states that this truck is standardized by the largest steamship companies on both the Pacific and the Atlantic coast. "The demand for a serviceable truck to handle sling loads from ships has increased wonderfully during the past few years, until now, with competition augmented by the opening of the Panama Canal, the steamship company without complete dock equipment finds itself badly handicapped. Particular care has been taken to give the Lansing sling load truck the strength necessary to withstand the wear, tear and abuse to which a truck of this nature is constantly subjected."

A multiple punch with automatic spacing table and gag control is described in a circular just published by the Hilles & Jones Company, Wilmington, Del. The punch, spacing table and drum control all act in unison, their operation being entirely automatic after the operator has set the machine for the punching combination wanted, and the operation of the outfit is controlled by a spacing strip or templet. They will space from the shortest spacing of which they are capable up to any distance required, as they are not limited by a ratchet movement. The drum which controls the movement of the gags is large in diameter, providing a great number of spacings, and is equipped with a series of quickly adjustable pins or thimbles for bringing punches into play by the shifting of the gags. The locking of the carriage automatically sets the brake, which locks it in for punching and disconnects the motive power, and at the same time operates a clutch on the punch, setting the main shaft in motion. This movement of the shaft moves the drum one space, bringing the thimble in contact with the release mechanism of the gags, releasing them to be punched. While the punches are stripping the material, an electric contact is made momentarily, which releases the carriage and starts it on its way to the next stopping point, and at the same time releases the gags used at the previous stroke and resets them for the next movement of the drum.

Air tools for shipyards and docks, such as riveting hammers, chiping hammers, etc., are described in illustrated Bulletin No. 28 just published by the Cleveland Pneumatic Tool Company, Cleveland, Ohio.

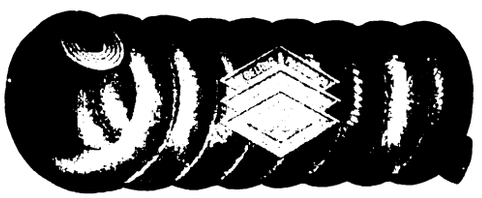
The Union composite disc valve is described in a booklet just published by the William Powell Company, Cincinnati, Ohio. This supplements a general catalogue of Powell steam specialties which the same company has also recently published.

J-M Asbesto-Sponge Felted Pipe Covering is described in Booklet No. 100, just published by the H. W. Johns-Manville Company, Forty-first street and Madison avenue, New York. This booklet states that if your boiler were a mile from your engine, and your pipes were covered with J-M asbestos-sponge felt pipe covering, the loss of heat through radiation and condensation would be far less than that in 100 feet of poorly insulated pipe.

"Water Distillation." This is the subject of a catalogue on "Tripure" apparatus which has just been published by the Standard Water Systems Company, Jamaica, N. Y. Among the devices described and illustrated in this catalogue is the "Tripure" marine evaporator, which is described as follows: "In a marine evaporator the essential feature is the ease with which the coils may be removed for cleaning or repairing (should this become necessary). An exclusive patented feature of a 'Tripure' evaporator is the revolving manifold, by means of which each and every coil can be removed without disturbing the others. This is accomplished in a few minutes, by simply loosening an upper and lower connection—a wrench being the only tool required. The manifolds are special bronze castings. The helical coils are of seamless drawn copper, and are connected to the manifolds by means of special bronze unions (extra heavy). The spring-like action of the coils prevents incrustation to a marked degree. The shells are of finest grade boiler sheet, with riveted seams or autogenous welded, as desired. The evaporator doors are special steel castings, and door frames are bolted or autogenous welded to the shell. Doors can be equipped with tumbler bolts at slight additional cost. The finest material and skilled labor are employed in constructing these evaporators."

COBBS HIGH PRESSURE SPIRAL PISTON
AND
VALVE STEM PACKING

It has stood the test of years and not found wanting



It is the most economical and greatest labor saver

WHY? Because it is the only one constructed on correct principles. The rubber core is made of a special oil and heat-resisting compound covered with duck, the outer covering being fine asbestos. It will not score the rod or blow out under the highest pressure.

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Efficiency as applied to marine terminals. This subject is taken up by the Elwell Parker Electric Company, 50 Church street, New York, in a circular which the company has just issued. The statement is made that one man with one Elwell Parker storage battery electric truck equals the performance of ten men with hand trucks. The company asks an opportunity to tell what is being accomplished with its trucks at some of the largest terminals in the country.

"A few facts on carburetion," as well as a complete description of the R. O. C. superheater, are contained in a folder published by the R. O. Sales Company, 1777 Broadway, New York. The folder in question gives in detail many advantages stated to be derived by the use of the R. O. C. superheater in all kinds of internal-combustion engines. A copy will be sent free to any of our readers upon request.

The Eiffel Tower is now the central military wireless station of France. From it radiate the messages that direct the whole army of France. Fans made by the B. F. Sturtevant Company, Hyde Park, Boston, Mass., are relied upon by the French Government to keep the set in operating condition. They were bought at the outbreak of the war to cool and ventilate the powerful spark gap of this apparatus. They are the identical fans which are often used on board ship for cooling the spark gap on wireless sets, and are described by the Sturtevant Company in bulletins.

Electric freight trucks are described in Catalogue 52-11, which has just been issued by the General Vehicle Company, Inc., Long Island City, N. Y. This catalogue states that the General Vehicle Company, as the pioneer manufacturer of electrical commercial vehicles, is taking the lead in the industrial truck field, and that nearly $500,000 has been invested in G. V. package trucks and tractors by steamship companies, railroads and manufacturers. The money-saving possibilities are stated to be enormous. Full information and a copy of the catalogue will be sent to any of our readers upon request.

"Chain Data Book No. 125" has just been published by the Link-Belt Company, Thirty-ninth street and Stewart avenue, Chicago, Ill., for the information of every one interested in efficient power transmission. "The Link-Belt Company has issued this 112-page data book, which contains all the information to enable you to figure out the correct silent chain drive for your work, and to determine its exact cost. It is the only book of its kind ever published. It tells all about that modern and efficient medium for transmitting power—the Link-Belt silent chain drive—the drive that is as flexible as a belt, as positive as a gear and more efficient than either." A copy will be sent free to any of our readers upon request.

BUSINESS NOTES

The Chicago office of the Terry Steam Turbine Company, Hartford, Conn., has been placed in charge of Mr. A. W. de Revere, and located in the People's Gas building. The company has also opened an office in the Michigan Trust Company, Grand Rapids, Mich., in charge of Mr. A. L. Searles, who will cover the southern peninsular of Michigan.

The Erie Pump & Equipment Company has just been organized at Erie, Pa. This is a consolidation of the Erie Pump & Engine Works, and of the Northern Equipment Company, Both of Erie. Manufacturing will be conducted by the plant of the Erie Pump & Engine Works. The officers of the new company are: E. W. Nick, president and treasurer; D. H. Du Mond, vice-president, and V. V. Veenschoten, secretary. John H. Dougherty, who for a number of years was in the employment of the Jeansville Iron Works as designer of centrifugal pumps, has been engaged to take charge of the pump designing department.

Activity in the Marine Refrigeration Line.—The Brunswick Refrigerating Company, Marine Department, New Brunswick, N. J., has been doing a very large business in the marine field lately, and writes International Marine Engineering as follows: "The Brunswick Refrigerating Company has bee ndoing a large business in the marine field in the installation of its apparatus. The American-Hawaiian Steamship Company has ordered five 2-ton Brunswick plants since

ASHTON Pop Safety Valves The Quality Standard

ASHTON Steam Gages The Accuracy Standard

No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

ROSS SCHOFIELD BOILER CIRCULATORS
OVER 3,000,000 HORSE-POWER INSTALLED OR ON ORDER
ROSS SCHOFIELD COMPANY
17 BATTERY PLACE NEW YORK CITY

Marine Terminals Package Freight Machinery

United Telpherage Company

Transferring, Assorting, Distributing, Tiering.
Cranes, Bridges, Telphers.

Hoists in trains, conveyors, movable overhead tracks — all terminal space served rapidly, continually, without rehandling.

TERMINAL TRANSFER CORPORATION
CONTRACTORS
30 Church Street, New York

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Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

For Sale.—Good passenger and freight steamer (wood), 1,700 gross tons; 253 feet by 36 feet, canal size; great bargain. Address Fred G. Crosby, Milwaukee, Wis.

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HOLZAPFELS
COMPOSITIONS FOR IRON AND STEEL VESSELS' BOTTOMS
In use and in stock at all ports of the world. Over 18,000,000 gross tons of shipping coated annually
Proprietors of INTERNATIONAL COMPOSITION, ANTICORROSIVE, and ANTIFOULING
HOLZAPFELS AMERICAN COMPOSITIONS CO., Offices, Welles Bldg., 18 Broadway, N. Y.
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the last report. Two of these are for the steamers *Mexican* and *Columbian*, and the other three are for the steamers now being built. These make a total of 46 plants installed by the American-Hawaiian Steamship Company. The Government has ordered through the Bowers Southern Dredging Company 1-ton plants for the dredges *San Jacinto* and *Sam Houston*, and through the Dubuque Boat & Boiler Works for the combination dredge and snag boat *Dennison*. The Texas Company has ordered two 1-ton plants for each of their new steamers now being built by the Fore River Shipbuilding Corporation. With these orders the Texas Company will have a total of 10 Brunswick plants. The Mallory Steamship Company has equipped their steamers *Neches, Medina* and *San Jacinto* with 2-ton Brunswick plants. Through the Newport News Shipbuilding & Dry Dock Company the Standard Oil Company of New Jersey has placed orders for 2-ton plants for the *Charles Pratt*, the *H. H. Rogers* and a duplicate of the *John D. Rockefeller*. The Standard Oil Company of New York has placed an order for a 2-ton plant for the steamship *Rayo*, replacing there a machine of another make. Through the Newport News Shipbuilding & Dry Dock Company, the Brunswick Refrigerating Company has also received orders for a 1-ton plant for the New York & Porto Rico steamer now building at their yards. Also for a 1-ton plant for the steamer which they are building for Crowell & Thurlow, of Boston. The New York & Porto Rico Steamship Company ordered direct two 4-ton plants for the steamship *Coamo*. The New England Coal & Coke Company has ordered 1-ton plants for each of the steamers *Arlington* and *Brandon*. The Carpenter-O'Brien Company, of Jacksonville, Fla., has ordered through the New York Shipbuilding Company a 1-ton plant for the steamship *William O'Brien*. There are now over 250 Brunswick plants installed on steamships, and each and every one of them is giving entire satisfaction. Of those companies having one steamship equipped with a Brunswick plant, and having other steamers which they might equip, over 70 percent have installed two, three or even many more plants, showing the entire success of the Brunswick plants. Full information will be given regarding these plants on request to the Brunswick Refrigerating Company, Marine Department, New Brunswick, N. J., and descriptive literature will be sent upon request."

RECENT INSTALLATIONS of the Ross Schofield system of circulation. The Ross Schofield Company, 17 Battery Place, New York, sends INTERNATIONAL MARINE ENGINEERING the following list of steamers, which it states have been recently fitted with its system of circulation: *Britannic, Ceramic, Athenic, Coritnic, Ionic, Irishman*, of the White Star Line; *Metapan*, United Fruit Company; *Essex*, Merchants & Miners Company; *Dochra, Suruga, Satsuma*, Barber & Company; *International*, International Elevator Company; *Irvington*, Lehigh Valley Railroad Company; *E. F. Moran*, Moran Towing Company; *City of Sydney*, Dominion Coal Company; *Statendam, Oosterdijke, Westerdijk, Noorderdijk, Zuiderdijk, Zyldijk*, Holland-American Line; *Norwegian, Nortonian*, new steamer, Leyland Line; *Appenine, Austriana, Birmingham, Boliviana, Braziliana, Dettingen, Egyptiana, Hockelaga, Indiana, Lingan, Norfolk, Persiana, Richmond, Tunstall, Crown Point, Eagle Point, North Point, South Point, Start Point, West Point, Caterino, Crosby, Feliciana, Oristano, Rossano*, Furness, Withy & Company; *Kylemhor*, Abram Addie & Cousins; new steamers, two new steamers, Richardson & Westgarth; *Saba, Sargasso, Spheroid, Santaren, Salybia, Serrana, Savan, Saro*, Scrutton & Company; *Duke of Montrose*, Caledonian Steam Packet Company; *Sea Prince, Bristolian*, C. G. King & Sons; *Conqueror, Conqueress*, Conqueror Towing Company; *Foxhound*, Britannia Towing Company; *Sirius*, Royal Holland Steamship Company; *Houtman*, Royal Packet Steam Navigation Company; new steamer, S. S. 184, *Vrybergen, Zevenbergen*, Furness Shipping & Agency Company; *Zeelander, Frisia*, Royal Holland Lloyd; *Alfalfa, Margarita*, Arthur Holland & Company; *Trusty*, ferryboat, dredger *No.* 1, dredger *Abertawe*, dredger *Beaufort*, Swansea Harbor Trust; two new steamers, Harland & Wolff; new steamer, Atlantic Transport; *Philadelphia*, American; *Samland*, Red Star; *Roald Amundsen, Bangor, Aara, Dacpo, Orn, Import, Linga II, Export, Santiago Parat, Thorsberg, Vasco da Gama, Vinstra, Atle Jarl, Frogner, Alber W. Selmer, Portia, Aztec*, Haakon Larsen; *Soerakarta, Djokja*, Rotterdamache Lloyd; *Jupiter, Triton, Delphin, Niobi, Leda, Mohawk, Kiowa, Tecumseh, Sioux, Mochican, Ems, Meppen, Pawnee, Osage, German-American.*

OUR SEVENTH ANNUAL DREDGE NUMBER

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C. B. Peck has resigned the position held by him for a number of years in the New York office of the B. F. Sturtevant Company, and after May 1 will be associated with Messrs. Blake & Williams, steam heating contractors, 26 Grove street, New York.

A Large Order for Steam Gages.—The American Steam Gauge & Valve Manufacturing Company, Boston, Mass., recently completed, on an emergency order for the Fire River Shipbuilding Corporation, Quincy, Mass., a lot of gages, forty-two in number, with 16-inch illuminated dial. These were turned out in fifteen days' time. The shipment also included 600 small gages, which were produced in the same period of time. The American Steam Gauge & Valve Manufacturing Company states that its manufacturing facilities provide for emergency orders of this sort without interfering with their regular work.

Small Mazda Lamps with Concentrated Filaments.—The distinctive features of the concentrated filament Mazda lamps of high wattages have proved so popular that the Edison Lamp Works of the General Electric Company, Schenectady N. Y., has developed vacuum Mazda lamps of similar appearance in the 25, 40 and 60-watt sizes. This concentrated filament construction gives greater vertical distribution of light than the regular Mazda lamps of corresponding wattages. The new lamps will, therefore, be employed where natural distribution of light downward is required. They can be used in existing sockets and fixtures. These lamps will be made in the same sized bulbs as the corresponding regular Mazda lamps, will have the same spherical watts per candle-power efficiency, and will have a rated average life of 600 hours.

TRADE PUBLICATIONS

GREAT BRITAIN

"Refrigerating Machinery for Marine Service and Warships" is the title of a 100-page illustrated catalogue published by J. & E. Hall, Ltd., 10 St. Swithins Lane, London, E. C. "In issuing this edition of their marine catalogue, J. &. E. Hall, Ltd., are glad to be able to present a record of continuous progress and expansion. They have found it necessary time after time to increase their works to enable them to cope with the growing demand for their refrigerating machinery and accessories. The best and most up-to-date machinery has been installed, and they may fairly claim to be in an unsurpassed position for turning out work expeditiously and economically. Material and workmanship employed continue to be of the highest class, and the fullest advantage has been taken of the many improvements introduced in recent years to ensure accuracy and interchangeability of standard parts. It is of considerable importance to note that all the parts of the refrigerating machines are made at their own works and under the directors' personal supervision. All parts are carefully examined and tested at every stage of manufacture by their own experts, and, if desired, by the purchasers' representatives. The expense to purchasers in this connection is very small as compared with that for plants the various parts of which have been separately sub-contracted for with different makers. The list of purchasers includes practically every British and foreign steamship company of note; the large number of repeat orders received affords the most convincing proof of successful installations and satisfied customers. With their unrivaled experience of this branch of engineering, J. & E. Hall, Ltd., are in a position to give the

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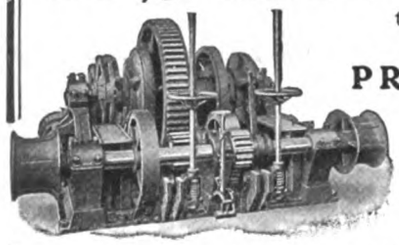

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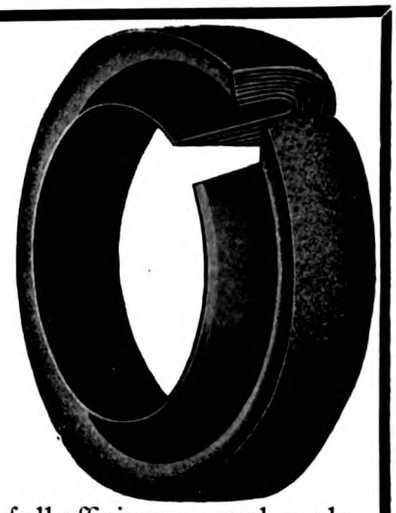

You can't get full efficiency—real work for every ounce of power generated—if you use ordinary packings in the stuffing box. Ordinary packing depends upon gland pressure to hold it so tight as to prevent leakage. At all times it must be kept tight enough to hold the greatest pressure it must operate against—and just a little tighter than necessary to be sure leakage is impossible. Therefore, ordinary packing acts as a brake *all* the time in order to be equal to the demand of a *very small part* of the time—causing a continuous and tremendous power waste.

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IMPORTANT ARTICLES

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INTERNATIONAL MARINE ENGINEERING

DECEMBER, 1914

Tank Ship Construction. Illustrated.
Programme for Naval Architects' Annual Meeting.
S. S. Great Northern and Northern Pacific. Illustrated.
Launching Calculations. Illustrated.
New French Battleships. Illustrated.
Bids for New United States Destroyers.
Repairs to Lake Freighter H. M. Hannah, Jr. Illustrated.
The White Star Liner Brittanic. Illustrated.
Steamship Edward Peirce. Illustrated.
Progress of U. S. Naval Vessels.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Cracked Cylinder Flanges.
- An Interesting Case of Boiler Corrosion. Illustrated.
- Quick Emergency Repairs. Illustrated.
- A Boiler Failure.
- Size of Inboard Bearings, Proper Design of Crossheads and Faults of Lubricating Systems.
- Bearings for Shafts, Etc. Illustrated.

JANUARY, 1915

Editorial Comment.
New United States Revenue Cutters. Illustrated.
Naval Architects' Annual Meeting. Illustrated.
Naval Engineering Ship Models.
Werkspoor Motor Ships in Service.
Tank Ship Construction. Illustrated.
A Lumber Crane of Large Capacity.
Adventures of the Nantucket.
Steamer Francis Hanify. Illustrated.
The U. S. Collier Jason as a Christmas Ship. Illustrated.
Shipbuilding in the United States in 1914.
Economy Talks by "Old Scotch"
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Valve-Spring Jams Piston-Rod. Illustrated.
- Unique Pump Repairs.
- Repairs to a Cracked Cylinder. Illustrated.
- An Unusual Accident to a Safety Valve. Illustrated.
- Experiments in Coal Consumption.
- Saved by Uncle Sam's Bountv.

FEBRUARY, 1915

Self-Unloading Freight Steamer Huron. Illustrated.
Salvage Work on the Empress of Ireland. Illustrated.
Electricity on Board Ship.
Motor Ship Tongking. Illustrated.
New Ore Unloading Plant at Huron. Illustrated.
New Freight Carrying Steamer Van Hogendorp. Illustrated.
Tank Ship Construction.
Dyson Chart System of Propeller Design. Illustrated.
Trials of the Submarine Tender Fulton. Illustrated.
New Sea-Going Steel Tug. Illustrated.
Congestion of Freight at New York Piers. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- The Use of Silver Nitrate.
- Propeller Blade Layout. Illustrated.

Re-Floating the Steamship Zeeland by Compressed Air.

MARCH, 1915

Transfer Facilities at Marine Terminals. Illustrated.
Electric Trucking at the New York Terminal of the Southern Pacific Steamship Company. Illustrated.
Freight Handling at Railway Marine Terminals. Illustrated.
Handling Cotton With Electric Freight Trucks at Galveston. Illustrated.
Unloading Cargoes by Portable Machines. Illustrated.
Reservoir Effects in freight Movements. Illustrated.
Marine Terminal Machinery.
Points of Attack in the Terminal Problem. Illustrated.
Barge Canal Terminal. Illustrated.
Facilities for Shipping and Freight Handling at River Ports.
Freight Handling at Havana, Cuba. Illustrated.
Barges Equipped with Brownhoist Locomotive Cranes for Handling Coal. Illustrated.
Inclined Elevators Increase Economy of Marine Terminals. Illustrated.
Shipyard at Prince Rupert Terminal. Illustrated.
The De Mayo System for Coaling Ships. Illustrated.
Economy Gained by Handling Freight With Electric Trucks at Marine Terminals. Illustrated.
Lumber Operations on the Atlantic Coast. Illustrated.
Progress of U. S. Naval Vessels.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Insignificant Omission the Cause of Great Damage.
- Handy Kinks for the Engineer.
- Faulty Design of Marine Boilers.
- Instructions for Firing.

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TRADE PUBLICATIONS.

AMERICA

Engineering specialties of various sorts are described in a "Water Gage Apparatus" catalogue published by the Jerguson Gage & Valve Company, 504 Broad building, Boston, Mass.

"Talbot Steam Power Plants" are the subject of Bulletin A, published by the Talbot Boiler Company, 120 Liberty street, New York. In this bulletin the statement is made that an oil-burning marine steam plant of 500 indicated horsepower, using ordinary boilers and the cheapest grade of oil, consumes 1,000 pounds per hour at a cost of $3, or $12,000 per year of 4,000 steaming hours, and that a 500 brake-horsepower Talbot steam plant, using the same fuel ($1 per barrel of 42 gallons) consumes 375 pounds, at a cost of $1.12 per hour, or $4,480 per year, saving a difference in the cost of fuel alone of 160 percent, or $7,500 per year.

"Marine Refrigeration" is the title of the latest catalogue published by the Brunswick Refrigerating Company, Marine Department, New Brunswick, N. J. Refrigeration makes it possible to carry ships' stores and perishable cargo of any kind for an indefinite period without loss. It gets rid of the delay, muss, expense and inefficiency of icing, and insures dry refrigerators and even temperatures much lower than is possible with ice. It furnishes ice-cold drinking water and makes any quantity of ice for table and other uses necessary. The manufacturer states that a Brunswick marine refrigerating plant costs little to install and pays for itself in a very short time.

"The Adventures of a Bale of Hemp." This is the title of a little booklet handsomely printed in two colors which has just been issued by the Columbian Rope Company, Auburn, N. Y. "'The Adventures of a Bale of Hemp' is only one illustration of the effort we made to keep up the high standard of our Manila fiber despite the difficulties brought on by the war. We are constantly endeavoring to secure the pick of fiber, not only of manila, but of sisal, flax, hemp and jute. These fibers being used in making our complete Columbian line of rope and twine. Like the steamer mentioned in the story, we 'go out of our way' to make sure. You can always depend absolutely on any rope or twine bearing the Columbian trademark."

Cranes and hoists. such as electric traveling cranes, hand-power cranes, grab-bucket cranes, jib cranes, monorail cranes, electric hoists, chain hoists, I-beam trolleys and track systems, are described in a catalogue published by Alfred Box & Company, Philadelphia, Pa. Any of our readers interested in this subject should send for a free copy of the catalogue.

Ammonia Condenser Gasket No. 216 is one of a great line of rubber specialties described in circulars published by the Peerless Ruber Manufacturing Company, 16 Warren street, New York. This gasket is stated to be a specially-made rubber compound that resists oil and ammonia combined, even at high temperatures. In the same circular is described Ammonia Ring No. 3,792, which is made especially for keeping glands tight.

An electric hoist is described by the Link-Belt Company, Chicago, Ill., in Bulletin 207. A number of advantages are claimed for this electric hoist, such as exceptionally small head room, all parts fully inclosed yet readily accessible, minimum number of parts, gears and bearings automatically lubricated, mechanical brake and resultant wear eliminated in D. C. hoist, etc. The Link-Belt Company also designs and builds elevators and conveyors for handling all kinds of materials, loose or in bulk, locomotive cranes, coal tipples, coal washeries, hoisting and unloading machinery, power transmission machinery, and elevator, conveyor and power transmission chains. Catalogues sent on request.

The Wolverine Motor Works, Bridgeport, Conn., has received the following letter from the engineer of the pleasure boat *Galvez*. The *Galvez* is a boat 101 feet by 21 feet by 4½ feet, and is equipped with a 100-horsepower Wolverine engine: "The producer is working perfectly, and is proving very economical. On a 14-hour run to Houston and return, three-fourths of a ton of coal was used. The boat *Galvez* is purely a pleasure craft, and the producer must be so handled as to be ready to start at any moment. The average run lasts an hour and a half. From one to five trips are made each day. Night runs for dances, etc., last four hours as a rule. My controls—gas, steam and gasoline—are so arranged that I do not have to move to operate. I find the producer easy to operate, and the reliability is being impressed upon local engineers. The majority are much pleased with the ease of handling at extreme slow speed. No back firing or engine troubles."

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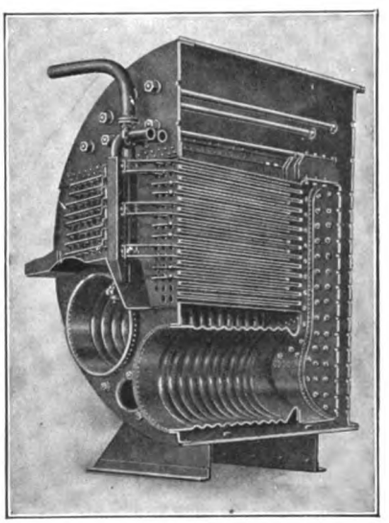

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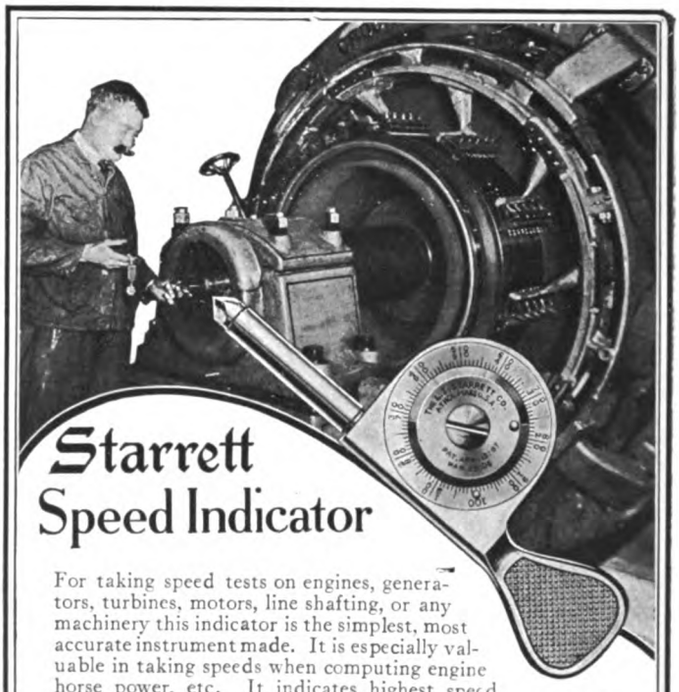
Hydraulic jacks are described in Catalogue 91, published by the Watson-Stillman Company, 50 Church street, New York. "Our line of hydraulic tools is so general and the illustrations of the various machines so numerous that we find it convenient to divide the tools into classes, making each class the substance of a catalogue. At the back of this book is a list of these classified catalogues, any of which will be mailed upon application. We have built a great number of special tools which cannot be included in our general classes and are therefore not advisertised. If the manufacture of your product demands a special apparatus we would remind you that our large equipment and experience have particularly qualified us to design and build the best tool for your requirements."

"Steam and Power-Driven Compressors" is the title of Bulletin 34-M, just published by the Chicago Pneumatic Tool Company, Fisher building, Chicago, Ill. "Class O compressors represent the most advanced design in duplex, high-speed, enclosed frame, self-oiling machines for general use. Their development has been preceded by our fifteen years' experience in the manufacture of air compressors, and they embrace all of the features which this experience has demonstrated to be of permanent value. No departure from previous standards has been made except where thorough tests have shown that marked improvement could be accomplished thereby. The result is a compressor of remarkably simple construction with few parts, all of which are readily accessible. Materials have been selected and fabricated so as to combine light weight with great mechanical strength and ability to successfully withstand severe service and heavy overloads. Elimination of all air valve gearing is one of the specially strong features of Class O compressors, and is directly due to the employment of our patented Simplate inlet and discharge valves of the flat disc type. These valves are the distinguishing feature of these compressors, and safely permit the high speeds demanded by present-day practice. Simplicity, liberal bearing surfaces, close automatic regulation and an automatic and positive self-oiling system of lubrication also contribute to the satisfactory performance of these machines and justify the initiative of critical buyers in installing them."

"Graphite in Boilers" is the title of an article published in the March issue of *Graphite*, issued by the Joseph Dixon Crucible Company, Jersey City, N. J. It is a reprint from an article in *Power*, and reads as follows: "Much has been said in *Power* relative to the use of graphite in boilers. I first used graphite in a plant having four 300-horsepower watertube boilers. No compounds had been used in this plant and the tubes were in fair condition. It required, however, from 12 to 15 minutes to get through a tube with a turbine cleaner, maintaining 180-pound water pressure at the turbine, and occasionally we encountered tubes which required 20 to 30 minutes, but 15 was a fair average. Before using graphite we turbined the boilers every ninety days, and this practice was followed for about nine months after it had been in use. Notwithstanding that the output of the plant was increased more than 30 percent during the first nine months' use of graphite, we were enabled to increase the continuous runs of the boilers. Records show that two boilers were operated for 139 and 143 days, respectively, without turbining any of the tubes. Then they were opened and turbined throughout without difficulty. Furthermore, we were able to get through most of the tubes in less than 8 minutes for each. Graphite did not show favorable signs until it had been in use more than five months, and did not get in any good work until we had used it for about seven months; at this time one and one-half barrels had been used. At the end of seven months we began loosening large pieces of scale in the drums for over two days, and succeeded in getting off large quantities of scale which ranged from one-eighth to five-sixteenths inch thick. In my next plant I found dirty boilers and lost no time in ordering a turbine cleaner and a barrel of graphite. It required more than five months to get the cleaner, and this gave the graphite a chance to act before its arrival. I find that graphite will soften incrustation and loosen the heavy scale in the drums or on the sheets; it is, however, essential that mechanical methods be employed to remove the scale. If maximum results are to be realized from the use of graphite, the boilers must be cooled down thoroughly before they are opened, and the drums must be washed immediately with a large hose and high-water pressure. The scale will be soft mud and wet, but it will get hard when it dries. It is much easier to wash the surfaces and then scrape them than to allow the accumulation to solidify and then pound it loose with the peen of a hammer. Do not take the tube caps or the man-heads off and allow a boiler to stand over night before washing and turbining. Take the tube caps off and put the turbine through the tubes as fast as possible. Then if any scale of consequence still remains, replace the cutters on the turbine cleaner with new ones and go through the tubes carefully the next day."



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For taking speed tests on engines, generators, turbines, motors, line shafting, or any machinery this indicator is the simplest, most accurate instrument made. It is especially valuable in taking speeds when computing engine horse power, etc. It indicates highest speed without heating. Parts are enclosed like a watch. Made in three styles—prices, $1.00, $1.50 and $3.00.

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World's Greatest Toolmakers
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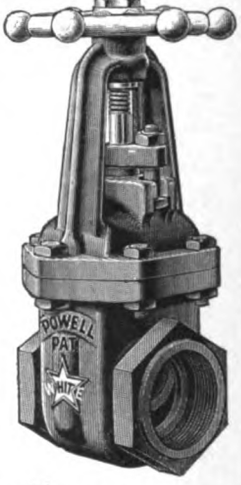

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Screwed or
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Medium and Extra
Heavy Patterns.

They Take Pressure
Either Way.

Ask your dealer for Powell Valves or write us.

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DEPENDABLE ENGINEERING SPECIALTIES
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SCALE?

If you have had scale trouble in your boilers and didn't get relief by using boiler graphite—it is a pretty safe bet that it wasn't **Dixon's Boiler Graphite** you used.

If you have scale troubles and have never tried boiler graphite, start **now** and start **right**—use Dixon's —**The Pioneer** Boiler Graphite.

Reasons? Plenty of them—in Booklet No. 75-T, on "Graphite for the Boiler," sent for a postal.

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

A valuable drop-forgings catalogue has just been published by J. H. Williams & Company, 63 Richards street, Brooklyn, N. Y. This is a handsomely printed and profusely illustrated volume of 160 pages, and should be in the hands of every one interested in drop-forgings and drop-forged tools. Pages 10 to 64 are devoted to drop-forged wrenches; pages 65 to 80 to the company's new and improved line of "Agrippa" tool holders; pages 81 to 97 to lathe dogs, "C," and strap clamps and caliper gages; pages 98 to 110 describe thumb nuts and screws, eye bolts, swivels, hoist hooks, wire rope sockets and handles; pages 113 to 119 are devoted to pipe fitters' tools; pages 122 to 137 to gas-engine forgings, and the balance of the book to miscellaneous articles like dealers' sample boards and racks of various sorts. There are also a number of useful tables quoting approximately the weights of the articles listed in the catalogue. Besides this there is a long list of the uses for which J. H. Williams & Company manufacture special drop-forgings. Many pages are devoted to a description of Williams' equipment and its special facilities for turning out a superior line of tools.

Pumps—feed, sanitary, bilge, fire and air pumps—also condensers, evaporators, ash ejectors and other marine specialties, are described in a catalogue published by the M. T. Davidson Company, 154 Nassau street, New York.

The Körting mechanical system of oil burning is described in a marine catalogue published by Schutte & Körting Company, 1253 North Twelfth street, Philadelphia, Pa. It is stated that in this system the oil, which has been properly heated and put under pressure, leaves the Körting centrifugal burner perfectly atomized without using steam or air as the atomizing medium, thus producing an exceptionally soft flame. This system is in successful operation on battleships, torpedo boats and on ships of the merchant marine.

"Ice and Refrigeration by Turning a Switch." This is the title of an ilustrated circular just issued by the Audiffren Machine Company, 90 West street, New York. The circular describes this machine in part as follows: "Ice and refrigeration can be obtained by turning a switch. This is done by the Audriffren-Singrun ice and refrigerating machine, which has been in continuous use in France for nine years and in the United States for four years. Over 800 of these machines are in daily use at the present time. The A-S machine is manufactured for us in this country by the General Electric Company—a guarantee of its practicability. No ammonia is used in, or in connection with, the machine. It makes cold or ice, or both, without smell, damp or dripping, and without chemicals or recharging."

The Chelsea automatic striking ship's bell clock is described in a circular issued by the Chelsea Clock Company, 16 State street, Boston, Mass. This circular states that "the most attractive, appropriate and useful article ever on the market for use on yachts and in yacht clubs, house boats, medium and large-sized motor boats, country and seashore estates, marine, shipping and naval architects' offices, specialty stores, cafés, etc. Experience has shown that over 95 percent of all the demand for these outfits has been for the 8½-inch bell. We now make these outfits in an improved way, doing away with the use of the relay and large box shown in our former catalogues and booklets, putting the magnets and mechanism for striking the bell with its own tongue, in a case, practically weather-proof, installed inside the bell itself. It costs somewhat more, but the value is there. On a yacht it will operate in heavy seas. The tongue of the bell is reversible, so, when desired, a softer tone can be had; desirable in small halls, etc."

The Ingersoll-Rand Company. 11 Broadway, New York, has just issued Form 3015, "Portable Air Compressors," illustrated, 32 pages, 6 by 9 inches. This is a complete treatise on the subject of portable air compressing outfits which have been developed expressly for the contractor, mine operator, factory manager and others employing air tools in connection with work of a temporary or semi-permanent character. A list of bulletins describing in detail each particular line of portable compressors is given, together with catalogues of the various pneumatic tools and equipment mentioned throughout the catalogue. The Ingersoll-Rand Company has also issued Form 4032, "Jackhamer Mounting, Type JM-6," illustrated, 4 pages, 6 by 9 inches. This bulletin covers drill mounting especially adapted to accommodate the "Jackhamer," with or without the water feed, for such flat-hole work as drifting and underhand stoping in metal mines where shallow holes are required, for breaking down coal and for driving gangways in coal mines. Copies of all Ingersoll-Rand bulletins free on request.

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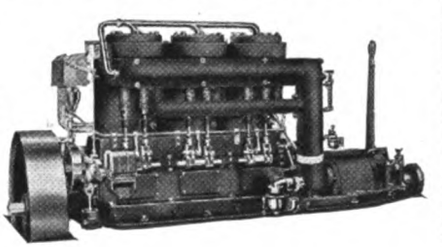
THE MOTOR WITH THE BORE and STROKE

FUELS { KEROSENE (PARAFFIN) / GASOLINE (PETROL) / DISTILLATE / SUCTION PRODUCER GAS

Write for Catalogue No. 73



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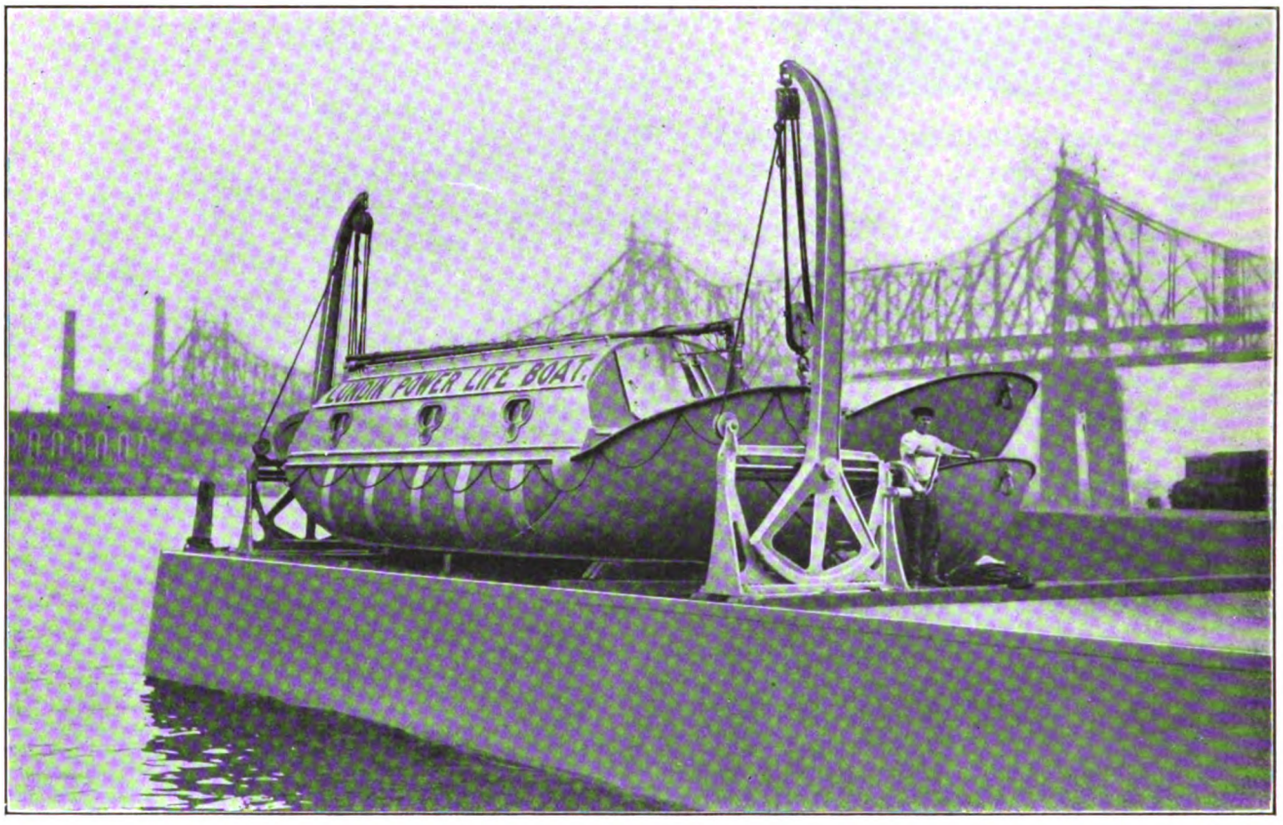
LUNDIN LIFEBOAT SYSTEM

Adopted by the United States Army Transport Service

This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



170 PERSON UNIT:—30 Ft. Lundin Power Lifeboat (outboard) 50 Persons, and Two 28 Ft. Lundin Decked Lifeboats (inboard) 60 Persons Each, Under Double Acting Welin Davits.

Let us solve your life boat problems

Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

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"Marine Glue—What to Use and How to Use It," is the title of a pamphlet just published by L. W. Ferdinand & Company, 201 South street, Boston, Mass.

The metal steamship berths made by the Southern Bedding Company, Baltimore, Md., are described in a circular the company has just issued. These "Romelink" berths are stated by the manufacturer to represent the highest type of modern berth equipment, and to insure comfort and cleanliness in the smallest space.

The Baldt stockless anchor is described in a catalogue just issued by the Baldt Anchor Company, Chester, Pa. This anchor is used extensively by the United States navy and by the merchant marine. It is said to be made of the finest quality of open-hearth steel.

Marine Evaporators, grease extractors and the Reilly feed-water heater are described in bulletins published by the Griscom-Russell Company, West Street building, New York. Concerning the Reilly feed-water heater, the bulletin states that it gives the highest possible feed temperature, and that it is suitable for tugs, yachts, dredges and the largest vessels of all kinds.

"Watch the Thermometer" is the title of an interesting booklet published by the Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich., and a copy will be sent to any of our readers free upon request. This booklet states that a trial of the Eckliff automatic circulator in one of your boilers will make you some money. "We mean just that! You will make substantial fuel saving during the trial, and we will make the installation without a dollar's expense or the least obligation on your part. Remember, you assume no risk. The savings are guaranteed."

"Fibreclad" wire rope is described by the Waterbury Company, 80 South street, New York, in its new "Fibreclad Catalogue" just published. This rope is stated by the manufacturer to be the ideal rope for all marine purposes. Each strand is served with the best grade of tarred Russian hemp marlin, which prevents the chafing and wear of the wire strands during flexing movements, and also protects the wire strands of the rope from moisture or water, thus eliminating the possibility of rust, and also preventing foreign matter, such as coal or cement dust, gases and fumes, etc., from working through to the wire strands.

Marine fusible plugs, oil cups, lubricators, water gages and other engine and boiler supplies, are described in a catalogue which has just been published by the W. P. Phillips Brass Works, Sudbury street, Boston, Mass.

Fire hose for use on steamship piers and on board ship is described by the Eureka Fire Hose Manufacturing Company, 27 Barclay street, New York, in a catalogue the company has just issued. This linen fire hose is stated to be made of the best quality woven in circular form, and the weave itself is specially good for adding strength and length of service.

Ships' winches are described by the Lidgerwood Manufacturing Company, 96 Liberty street, New York, in a catalogue the company has just published. These machines are stated to be built upon a duplicate part system, insuring an absolute fit and prompt delivery of spare parts. The winches handle cargo rapidly, economically and quickly, thus saving ships' time in port.

Firetube superheaters for marine boilers are described in Catalogue "A," published by the Locomotive Superheater Company, 30 Church street, New York. The Schmidt superheater, which is described in this catalogue, is stated to save from 10 to 25 percent of fuel per unit of power developed, and to increase the power output of a given marine power plant from 10 to 25 percent. It is adaptable to either new or existing boilers of the firetube type, with no change in their design or construction.

High-speed twist drills, reamers, countersinks, flue cutters and lathe tools are described in illustrated Catalogue No. 15, just published by the Celfor Tool Company, Buchanan, Mich. "The Celfor Tool Company is the pioneer in the manufacture of high-speed twisted drills. We originated and perfected the twisted drill, and our efforts have since been devoted to the manufacture of drills and other tools by the twisting process. Since the first twisted high-speed drill was placed on the market by this company, it has been conclusively proven that tools so made possess distinct advantages over those milled from the solid. The forging or rolling of our sections to shape before twisting, tends to densify the metal and produces tools which cannot be excelled for strength and cutting qualities. We were the first to recognize that high-speed drills must have ample chip clearance and extra large shanks to accomplish the work for which they are intended. Our success in producing thoroughly efficient tools is attested by our large and constantly growing business."

PACKINGS FOR THE MOST SEVERE CONDITIONS

FIRO SUPERHEAT STEAM PACKING

CANNOT BLOW IT OUT

CANNOT BURN IT OUT

STYLE 1846

TURXO GLOBE AND ANGLE VALVE PACKING

TWISTED STYLE—251 BRAIDED STYLE—252

As a Valve Stem Packing, it is a Peer in its Class

NEW YORK BELTING AND PACKING CO.

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PHILADELPHIA, PA.—821-823 Arch Street
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BOSTON, MASS.—232 Summer Street
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"Firo" superheated steam packing and "Turxo" globe and angle valve packing, which are made especially for the most severe conditions, are described in circulars published by the New York Belting & Packing Company, 91 Chambers street, New York.

"Powerful Incandescent Lamps for Lighting Piers." This is the title of a bulletin published by the Edison Lamp Works of the General Electric Company, Harrison, N. J. "The new Commonwealth Fish Pier of Boston is probably the largest and finest of its kind in the world. The pier measures 1,200 by 300 feet, supports five buildings, covering an area of over 123,000 square feet, which include 90 stores, offices and an $800,000 ice plant. The pier, which will be occupied by the Boston Fish Market Corporation, has been designed by experts to handle the business in the most approved manner and with the least possible delay. The ice plant delivers ice to the dealers' stores and to the fishing fleet, and will furnish freezing and storage space on the dock, thus avoiding one and possibly two transportations. Thus fresh fish, in the best possible condition, wil be delivered promptly to the retail dealers. The lighting equipment consists of powerful, gas-filled 750-watt Edison Mazda Lamps in G-E Novalux Fixtures. When the pier, the ice and storage plants are fully completed, the installation will total fifty of these units, giving a grand total of nearly 60,000 candle-power. We invite you to confer freely with our expert lighting engineers on any problem of pier lighting or marine lighting involving the use of incandescent lamps. In the long list of sizes, ranging from 10 to 1,000 watts, you are sure to find the incandescent units that meet your requirements. The name Edison on a lamp is your assurance of established quality and unrivaled experience in lamp making."

An Official Blue Book has just been issued by the Bantam Anti-Friction Company, Bantam, Conn., manufacturer of ball and roller bearings of all types. In this catalogue is an article entitled "Mechanical Design of Ball Bearings and Roller Bearings," by W. S. Rogers, president of the Bantam Anti-Friction Company. This is a valuable and interesting article. We quote from the introduction as follows: "Some years ago I sat beside a bright college graduate in an audience listening to the discourse of a learned professor, when the graduate turned in disgust and said to me, 'The old fox is simply repeating a thesis prepared by our class four years ago.' This illustrates about what was listened to in regard to ball and roller bearings at an important public meeting not many months ago—simply a vague phonographic reproduction of what others had observed or theorized upon; an excellent advertising opportunity taken advantage of—nothing more nor less. The first important thing to know about ball bearings or roller bearings is the material to be chosen. This question can only be decided after one knows where the bearing is to be used, the revolutions per minute, the maximum load, whether the load is constant or intermittent, and the care the bearing will receive in service. The balls should be of the best quality in all cases. In selecting them the reputation of the ball maker is the only guide, as the largest manufacturer does not always make the best balls, neither is the highest-priced ball always the best. I have found from experience that hot-forged balls are the strongest, provided the maker has used the best grade of steel for the purpose. The honesty of the ball maker must be depended upon for this. The balls should be accurate. This the user can determine by measuring them for himself. Knowing that perfect accuracy cannot always be obtained, I have always used the formula shown at the left. The material for the housings, or shells, sleeves, rings, races and cones, as they may be called (for the nomenclature of ball or roller bearings has no standard), must be determined by the conditions. Jessop's tool steel may be suitable in one condition uncalled for in another, and totally unfit for the duty in still other conditions, and the same may be said of every known brand of steel. Practical knowledge of past performances is the only safe guide. Laboratory trials under refined atmosphere prove very, very little. Assuming, then, that we have the best of materials obtainable for ball bearings, the question is what is the best form of bearing? But before going into the problem, let us see what the ball has to do in the various types of bearings."

ASHTON Pop Safety Valves The Quality Standard

ASHTON Steam Gages The Accuracy Standard

No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

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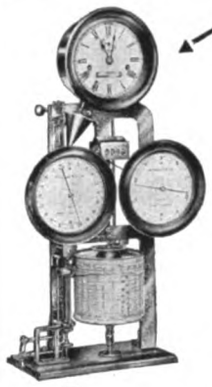
OVER 3,000,000 HORSE-POWER INSTALLED OR ON ORDER
ROSS SCHOFIELD COMPANY
17 BATTERY PLACE NEW YORK CITY



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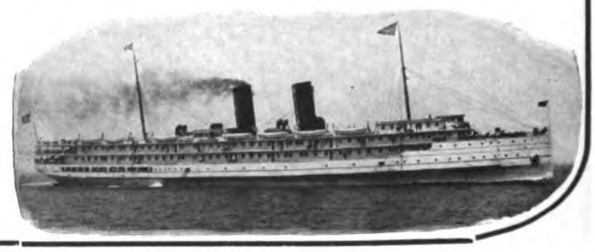
are by far the most accurate and efficient of all like devices. In addition to giving the mileage sailed, it shows the speed per hour on the dial and records this speed on a chart for every minute of the trip. These records can be dated and filed for future reference.

NICHOLSON RECORDERS are made for every type of vessel, from motor-boat to battleship and are exceptionally simple of operation.

NICHOLSON RECORDERS are found in every port in the world and are always highly efficient and economical. Catalog M is worth having. Send for it to-day. No obligation.

NICHOLSON SHIP LOG CO.
CLEVELAND, OHIO

Steamship "Yale"



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COMPOSITIONS FOR IRON AND STEEL VESSELS' BOTTOMS
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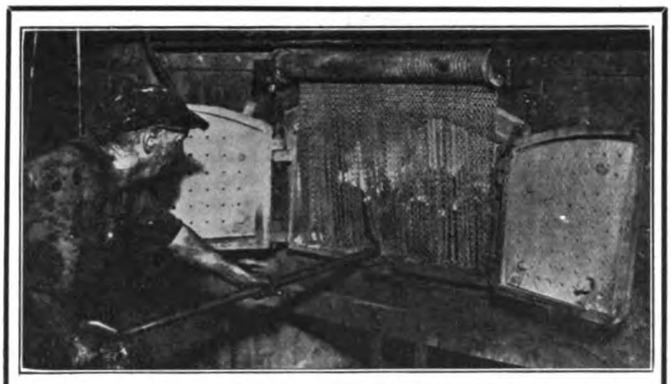


WIEGAND CHAIN DOOR

An auxiliary furnace door for Marine and Stationary Boilers.

Keeps heat in and cold out, *saving fuel.*

Protects tubes, shell and brickwork, *saving repairs.*

Produces cooler fireroom and more contented stokers.

Opening furnace door, automatically covers opening with a screen of small steel chain, which is flexible, penetrable and transparent.

Protected from heat, with clear view of fire,

STOKER THROWS COAL THROUGH SCREEN WITH EASE.

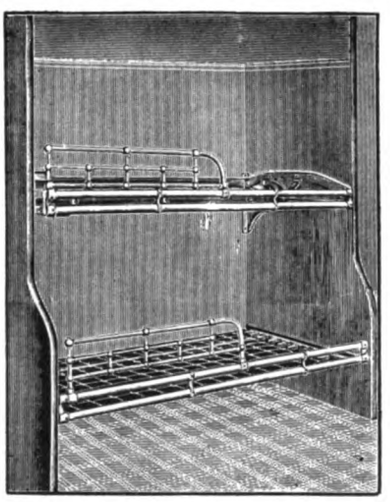
Fires Cleaned Without Discomfort.

E. J. CODD CO. BOILER & MACHINE WORKS

700 S. Caroline St., Baltimore, Md., U.S.A.

Romelink Metal Berths

represent the highest types of modern Berth equipment. "Romelink" insures Durability Comfort and Cleanliness in the smallest space



Romelink No. 16 Folding
No. 17 Stationary

CATALOGUE UPON REQUEST

THE SOUTHERN BEDDING CO.

BALTIMORE, MD.

Hydraulic pumps and valves are the subject of a large and profusely illustrated circular published by the Hydraulic Press Manufacturing Company, Mt. Gilead, Ohio. The manufacturers state in the introduction: "The reason why these hydraulic pumps, valves and fittings will solve your hydraulic pressure difficulties is because they were designed with that purpose in mind. From the beginning their success has been pronounced, because they have been constructed upon the fundamentals of service. The prime necessities for designing hydraulic equipment for successful service are a knowledge of every detail of its purpose, an insight into each secret of hydraulic pressure, mastery over every new development, and possession of the best mechanical skill for its production. Mount Gilead hydraulic pumps, valves and fittings are the result of having these prime necessities. No time has been too long, no study of labor too hard, no research too far-reaching for us in the accomplishment of these essentials. Good hydraulic pumps, valves and fittings are the essential parts of any hydraulic press outfit. Upon them depends the successful operation of your presses. Good work cannot be expected from your presses if they are operated by poor pumps and controlled by poor valves and fittings. For supplying the pressure to all kinds of hydraulic press equipment there are no better pumps, valves and fittings than those bearing the Mount Gilead trademark. No organization is better fitted than is our to design an hydraulic pump equipment, the quality and service of which will be unquestioned and with which there can be no comparison."

TRADE PUBLICATIONS

GREAT BRITAIN

Naval stores are the subject of a circular issued by Rylance & Sons, Mersey Works, Liverpool. "We beg to call your attention, as manufacturers of oakum and marine glue, that we think it will be to your advantage to send us your inquiries. We are continually securing new contracts for yearly supplies, and in case you require tenders should be glad if you will put our name on your list, so that we may have an opportunity of quoting to you specifications on the next occasion of your wanting."

"Concerning Belting and Transmission." This is the title of a catalogue just published by the North British Rubber Company, Ltd., Castle Mills, Edinburgh. "In rubber belting, as in all else, quality speaks. First cost is not everything. Your buyer may think it a fine thing to save 10 percent in the price of his rubber belting—especially as he will be continually repeating the saving—in fact, every time he replaces the belting, which will be often. But the wise man knows that to pay 10 percent more and get 300 percent longer life and no breakdowns is good business. There is no limit to the life of North British ruber belting. In fact, we received a complaint the other day because a main drive belt had lasted only seventeen years, while its predecessors had stood up for twenty. Of the other advantages of North British rubber belting we speak in the following pages."

BUSINESS NOTES

AMERICA

THE VALLEY IRON WORKS, INC., of Williamsport, Pa., has removed its New York office to Room 707, 30 Church street. Mr. W. H. Mills is the resident manager.

THE C & C ELECTRIC & MANUFACTURING COMPANY, Garwood, N. J., announces that its St. Louis agent, the Morse Engineering Company, has moved from the Central National Bank building to the Chemical building.

W. B. HUEY and A. H. HUEY have opened offices at 59 East Adams street, Chicago, Ill., under the name of The Huey Company, and will engage in the manufacture of blue prints and similar work.

THE NEW YORK OFFICE of the Chicago Pneumatic Tool Company has been removed from 50 Church street to 52 Vanderbilt avenue, and the Boston office has been removed from 191 High street to 185 Pleasant avenue.

THE WILSON-SNYDER MANUFACTURING COMPANY and the Wilson-Snyder Centrifugal Pump Company, whose home offices are in Pittsburg, Pa., have opened an office in New York at 52 Vanderbilt avenue. Mr. A. H. Sherwood is in charge.

When writing to advertisers, please mention INTERNATIONAL MARINE ENGINEERING.

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TH PYRENE MANUFACTURING COMPANY has moved its offices from 1358 Broadway to 52 Vanderbilt avenue, New York.

CHARLES ECKERT YOUNG, technical advertising specialist, has increased his office force, and has moved to new and larger offices in the Ellsworth building, 537 South Dearborn street, Chicago, Ill.

THE SPRAGUE ELECTRIC WORKS, 527 West Thirty-fourth street, New York, has recently opened a branch sales office in Cleveland, Ohio. It will be in charge of Mr. Frank H. Hill, manager, who also has charge of the Pittsburg office. The Cleveland office will be located in the Illuminating building.

THE PLYMOUTH CORDAGE COMPANY, North Plymouth, Mass., will award a $5 gold piece to anyone sending a Plymouth rope photograph, together with a description which will prove suitable for use in connection with the company's advertisements. The picture must show Plymouth rope in use or on sale, and measure at least 4 inches by 5 inches and should be packed flat. The description must give all the important facts about the scene.

NEVER SLIP SAFETY CLAMPS at the Panama-Pacific Exposition. The Never Slip safety clamp, made by the Never Slip Safety Clamp Company, 141 Broadway, New York, which has been awarded the gold medal at the second American Exposition of Safety and Sanitation, under the auspices of the American Museum of Safety, has been notified by the American Museum that its exhibit has been sent to the Panama-Pacific Exposition as one of the American Museum's exhibits on safety. These clamps are made for lifting boiler plate, and are designed especially not only to save time and labor, but to prevent accidents.

THE CONTRACT FOR THE EIGHT BOILERS for which bids were recently received by the Bureau of Supplies and Accounts, Navy Department (under Navy Schedule 7805, Class 141), has been awarded to the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., of Morris Heights, New York, who were the lowest bidders with boilers of the Seabury safety watertube type. These boilers are each to be 240 square feet heating surface, grate surface of 12.5 square feet, and although required to operate under only 165 pounds steam pressure will be of regular construction and capable of 250 pounds steam pressure. The tubes are 1-inch O. D., No. 12 B. W. G., and all flanges and steam connections will be in accordance with the standards of the Bureau of Steam Engineering. Four of the boilers are to be shipped to the Boston navy yard and the balance of four to the New York navy yard.

PRICE REDUCTIONS IN EDISON MAZDA LAMPS.—Practically all the sizes and types of Edison Mazda multiple lamps are affected by reductions in list prices that were put into effect April 1, 1915, by the Edison Lamp Works of the General Electric Company. On the regular straight side and round bulb lamps, from the 10-watt to the 250-watt sizes, also on sign lamps, stereopticon lamps, etc., the reductions range from 3 to 20 cents per lamp, according to the size. These reductions, which average about 10 percent, will tend to popularize further already popular lamps. The new concentrated filament vacuum lamps of 25, 40 and 60-watt sizes now list at only 5 cents per lamp more than the regular lamps of corresponding sizes. On the gas-filled, multiple lamp of 100 to 1,000-watt sizes, the reductions range from 50 cents to $1 per lamp, the average reductions being between 20 and 25 percent. The introduction of gas-filled lamps has been exceptionally rapid. Over a million are already in use. The decreased cost of these lamps will undoubtedly result in a still more rapid replacement of vacuum lamps by the more efficient gas-filled units.

THE MCNAB "CASCADE" BOILER CIRCULATOR AND FUEL ECONOMIZER.—The McNab Company, Bridgeport, Conn., shipped during the month of March "Cascade" boiler circulators for the following: American-Hawaiian Steamship Company, *Alaskan*, 12 furnaces 3 boilers; Kinsman Transportation Company, *Matthew Andrews*, 6 furnaces 2 boilers; Great Lakes Steamship Company, *A. E. Nettleton*, 6 furnaces 2 boilers; Postal Steamship Company, *T. Barlum*, 4 furnaces 2 boilers, *A. E. Stewart*, 6 furnaces 2 boilers, *J. J. Barlum*, 6 furnaces 2 boilers; St. Lawrence & Chicago Steam Navigation Company, Ltd., *W. D. Matthews*, 6 furnaces 2 boilers; Great Lakes Transportation Company, Ltd., *Glenshee*, 6 furnaces 2 boilers; Boland & Cornelius, *Theo. H. Wickwire, Jr.*, 6 furnaces 2 boilers; Standard Oil Company of California, *Standard No. 1* (tug), 2 furnaces 1 boiler; Lake Erie Transportation Company, *Wm. S. Mack*, 4 furnaces 2 boilers. Many further orders for this system have been received by The McNab Company for early delivery, including equipment for vessels belonging to the American-Hawaiian Steamship Company, Gulf Refining Company, Western Union Telegraph Company, etc.

IMPORTANT ARTICLES

PUBLISHED IN

INTERNATIONAL MARINE ENGINEERING

JANUARY, 1915

Editorial Comment.
New United States Revenue Cutters. Illustrated.
Naval Architects' Annual Meeting. Illustrated.
Naval Engineering Ship Models.
Werkspoor Motor Ships in Service.
Tank Ship Construction. Illustrated.
A Lumber Crane of Large Capacity.
Adventures of the Nantucket.
Steamer Francis Hanify. Illustrated.
The U. S. Collier Jason as a Christmas Ship. Illustrated.
Shipbuilding in the United States in 1914.
Economy Talks by "Old Scotch"
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Valve-Spring Jams Piston-Rod. Illustrated.
- Unique Pump Repairs.
- Repairs to a Cracked Cylinder. Illustrated.
- An Unusual Accident to a Safety Valve. Illustrated.
- Experiments in Coal Consumption.
- Saved by Uncle Sam's Bounty.

FEBRUARY, 1915

Self-Unloading Freight Steamer Huron. Illustrated.
Salvage Work on the Empress of Ireland. Illustrated.
Electricity on Board Ship.
Motor Ship Tongking. Illustrated.
New Ore Unloading Plant at Huron. Illustrated.
New Freight Carrying Steamer Van Hogendorp. Illustrated.
Tank Ship Construction.
Dyson Chart System of Propeller Design. Illustrated.
Trials of the Submarine Tender Fulton. Illustrated.
New Sea-Going Steel Tug. Illustrated.
Congestion of Freight at New York Piers. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- The Use of Silver Nitrate.
- Propeller Blade Layout. Illustrated.

Re-Floating the Steamship Zeeland by Compressed Air.

MARCH, 1915

Transfer Facilities at Marine Terminals. Illustrated.
Electric Trucking at the New York Terminal of the Southern Pacific Steamship Company. Illustrated.
Freight Handling at Railway Marine Terminals. Illustrated.
Handling Cotton With Electric Freight Trucks at Galveston. Illustrated.
Unloading Cargoes by Portable Machines. Illustrated.
Reservoir Effects in freight Movements. Illustrated.
Marine Terminal Machinery.
Points of Attack in the Terminal Problem. Illustrated.
Barge Canal Terminal. Illustrated.
Facilities for Shipping and Freight Handling at River Ports.
Freight Handling at Havana, Cuba. Illustrated.
Barges Equipped with Brownhoist Locomotive Cranes for Handling Coal. Illustrated.
Inclined Elevators Increase Economy of Marine Terminals. Illustrated.
Shipyard at Prince Rupert Terminal. Illustrated.
The De Mayo System for Coaling Ships. Illustrated.
Economy Gained by Handling Freight With Electric Trucks at Marine Terminals. Illustrated.
Lumber Operations on the Atlantic Coast. Illustrated.
Progress of U. S. Naval Vessels.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Insignificant Omission the Cause of Great Damage.
- Handy Kinks for the Engineer.
- Faulty Design of Marine Boilers.
- Instructions for Firing.

APRIL, 1915

French-Built Cable Ship Edouard Jeramec. Illustrated.
Refrigerating Plant on the First American Steamer to Bring Frozen and Chilled Meats from the Argentine. Illustrated.
New Southern Railway Coaling Pier at Charleston, S. C. Illustrated.
Construction of the Welland Ship Canal. Illustrated.
Stability of Vessels as Affected by Damage Due to Collision. Illustrated.
Installation of 120 Horsepower Bolinder Oil Engine in Pilot Schooner Gracie S. Illustrated.
Electric Towing System at the Panama Locks. Illustrated.
Introduction of a Modern Method in Shipbuilding. Illustrated.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers.
Two New Crandall Railway Dry Docks. Illustrated.
The Latest French Destroyers. Illustrated.
Output of Japanese Shipyards in 1914. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
The Old Navy and the New.
Letters from Marine Engineers:
- Economy of Coal and Boiler Corrosion.
- Interesting Change in Twin Screw Steamer. Illustrated.
- Preventing the Freezing of a Keel Condenser.
- Warship Construction in Navy Yards.
- A Criticism.

Recent Launches.
Marine Articles in the Engineering Press.
New Books for the Marine Engineer's Library.
Engineering Specialties. Illustrated.
Personal.
Selected Marine Patents. Illustrated.

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For Sale.—Good passenger and freight steamer (wood), 1,700 gross tons; 253 feet by 36 feet, canal size; great bargain. Address Fred G. Crosby, Milwaukee, Wis.

Mechanical engineer will be available by August 1 for position as works manager, superintendent, chief engineer or chief draftsman. Twenty years' experience, naval and merchant work in engineering department of leading shipyards of this country. Address *Engineer,* care of INTERNATIONAL MARINE ENGINEERING.

SCREW PROPELLERS

A comprehensive treatise on screw propeller design, showing how to estimate the power for propulsion of ships and calculate proportions of efficient propellers. A convenient chart system of design, devised by the author, is explained, and its practical application is discussed. Two volumes. Vol. I, 142 pages, 24 illustrations. Vol. II, 32 large plates. By Captain Charles W. Dyson, U. S. N. Price, $7.50.

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Every month's issue of INTERNATIONAL MARINE ENGINEERING contains much valuable information and should be kept at hand for ready reference.

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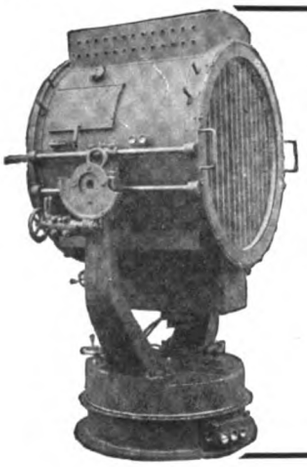

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Made in any size and any candle power from the small yacht lamp, to the largest navy standard type.

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Navy Department, Washington, D. C.

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS
29 West 39th Street, New York.

NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS
29 West 39th Street, New York City.

UNITED STATES NAVAL INSTITUTE
Naval Academy, Annapolis, Md.

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5 Adelphi Terrace, London, W. C.

INSTITUTION OF ENGINEERS AND SHIPBUILDERS IN SCOTLAND
39 Elmbank Crescent, Glasgow.

NORTHEAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS
Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

INSTITUTE OF MARINE ENGINEERS, INCORP.
58 Romford Road, Stratford, London, E.

L. F. HAMILTON, in charge of the advertising department of the National Tube Company, Pittsburg, Pa., has returned from an extended business trip to the Pacific Coast, in connection with the company's exhibition at the Panama-Pacific Exposition. The National Tube Company's exhibit is part of the United States Steel Corporation's exhibit, which is located in the Mines and Metallurgy building, and occupies 44,000 square feet—the largest single exhibit at the exposition.

AT THE MEETING OF THE EXECUTIVE COMMITTEE of the National Association of Engine and Boat Manufacturers, held April 2, the following officers were elected for the ensuing year: President, John J. Amory; first vice-president, Henry R. Sutphen; second vice-president, P. C. Jones; third vice-president, C. A. Criqui; treasurer, James Craig. Mr. Walter L. Fay was elected to the executive committee to serve out the unexpired term of one of the retiring members. The recent New York and Chicago National Motor Boat Shows were reviewed and the financial statement showed them to have been very successful. In addition to materially decreasing the cost of members' space at the shows this year, the National Association of Engine and Boat Manufacturers attended to and paid all freight and trucking charges on members' exhibits, a most unusual and stupendous undertaking in exhibitions of this kind.

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OR

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RAINBOW PACKING

CAN ALWAYS BE POINTED TO AS

A TROUBLE "CHASER" AND STEAM "HOLDER"

When once Rainbow Gaskets are properly placed in a steam line they can be relied upon to last years.

Where extreme conditions of expansion and contraction have to be met, Rainbow is able to keep joints tight under any pressure.

The reason for this is that Rainbow does not lose its resiliency after vulcanizing, the process of vulcanizing merely making it slightly harder and considerably stronger to resist.

Try Rainbow—it is as old as many full fledged Engineers today, 26 years and every year of the 26 it has made a record somewhere.

FOR USE IN STEAM, WATER, AMMONIA AND AIR PIPES

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TRADE PUBLICATIONS.

AMERICA

Neptune launching grease and Neptune launching stearine are the subject of a catalogue published by Fiske Bros. Refining Company, 24 State street, New York. This is said to be the ideal combination to use on the ways to insure a successful launching, and these materials are claimed to be used by all the prominent shipbuilders on both the Atlantic and Pacific coasts for launching vessels of every description, from barges to battleships.

Hydraulic dredges are described in a circular published by the Ellicott Machine Corporation, Baltimore, Md. Among the dredges described and illustrated in this catalogue are the sea-going hopper dredge *Comstock* and the 20-inch steel hull dredge *Sacramento,* at work on the Sacramento River, California. The company states that a dredge of the Sacramento type is now nearing completion and is for sale, and that it has hydraulic dredges always on hand and for sale, either completed or nearing completion.

Dragline cableway excavators, designed for digging and conveying material from under water or from a dry pit, for loading wagons or cars and delivering to bins or storage piles, are described in an illustrated catalogue which has just been issued by Sauerman Bros., Monadnock Block, Chicago, Ill. These excavators are intended for digging sand and gravel, and for many other kinds of excavation and stripping work. They are said to work successfully in either wet or dry excavation. The machine consists of a bucket and carriage mounted on a slack track cable. The carriage runs out to the loading point by gravity, and the track cable is slackened to permit the bucket to dig into the material. The track cable is supported at the power end by a mast or tower, and at the outboard end is fastened to a suitable anchorage. The machine is operated by a double-friction drum hoist. From the rear drum a steel cable, called the tension cable, leads to a set of fall blocks attached to the mast pole. These blocks afford a means for slackening and tauting the track cable, one end of which is supported by the fall blocks and the other end is fastened to a "dead man," or other suitable anchorage, planted in the bank of the pit or stream opposite the dumping point. It is claimed that the operation of this excavator is rapid and is under the positive control of one operator.

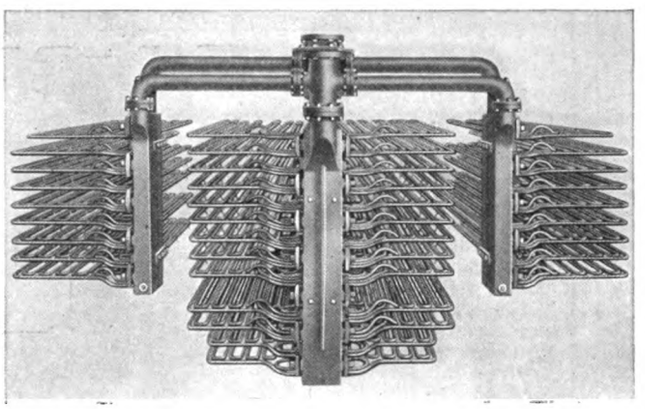
Marion dredges are described and illustrated in Catalogue 53, published by the Marion Steam Shovel Company, Marion, Ohio. These dredges represent thirty years' experience in designing hundreds of dredges, and the company states that thre is a Marion dredge for your work, no matter what or where the work may be.

Air drills are the subject of a catalogue which has just been published by the Cleveland Pneumatic Tool Company, Cleveland, Ohio. One of the drills illustrated in this catalogue is fitted with a wood-bit chuck and has a boring capacity of 1 inch in wood. It is adapted for drilling in steel or iron, and for such purposes is fitted with a chuck for square shank bits or with a No. 1 Morse taper socket. It has a capacity of ½-inch driling in steel. This machine is also used for drilling tell-tale holes in staybolts. The weight is 12 pounds and the speed 850 or 1,700 revolutions per minute. It is made with single or double speed as required, and is shipped on approval.

Double helical gears for driving propellers are described in Catalogue D-46, published by the De Laval Steam Turbine Company, Trenton, N. J. The catalogue states that De Laval gears permit a material reduction in weight compared with straight turbine or engine drive and a very considerable saving in coal. High-speed, small diameter screws are unsuitable for both moderate draft and moderate speed, while a slow-speed steam turbine is not efficient. De Laval speed reducing gears are claimed to solve the problem by uniting the high-speed efficient turbine to the reliable and efficient slow-speed impeller. These gears are built for all ratios up to 25 to 1, and for all powers.

"The Tool-Om-Eter" is the title of a bulletin published by the New Jersey Meter Company, Plainfield, N. J. "The principle on which these meters operate is the well-known law deduced by the French scientist Poncelet, which may be briefly stated as follows: 'The volume of a definite compressed fluid or gas flowing under small constant head through multiple orifices of the same shape and size, is directly proportional to the number of orifices exposed to the flow.' The New Jersey meters apply this principle completely, for the first time, in a simple automatic device requiring no expert manipulation and no use of mathematical formulas or calculations. Anyone who can read a thermometer can use these meters; the large, clear scale can be read to one-half of a cubic foot."

Less Bunker Space Equals Greater Cargo Capacity



Bunker space is fixed by the amount of coal burned between desirable coaling ports.

Any reduction in coal burned between these ports means that bunker space may be converted into revenue cargo holds.

From 10% to 20% less coal is burned and the same speed maintained by steamers whose boilers are equipped with our

Fire Tube Marine Superheaters

than would be possible with the same steamers using saturated steam.

You need not wait for new steamers before availing yourself of these advantages, as the superheater may readily be installed in existing boilers.

Let us submit designs

Locomotive Superheater Company

30 Church Street, New York, N. Y. **Peoples Gas Building, Chicago, Ill.**

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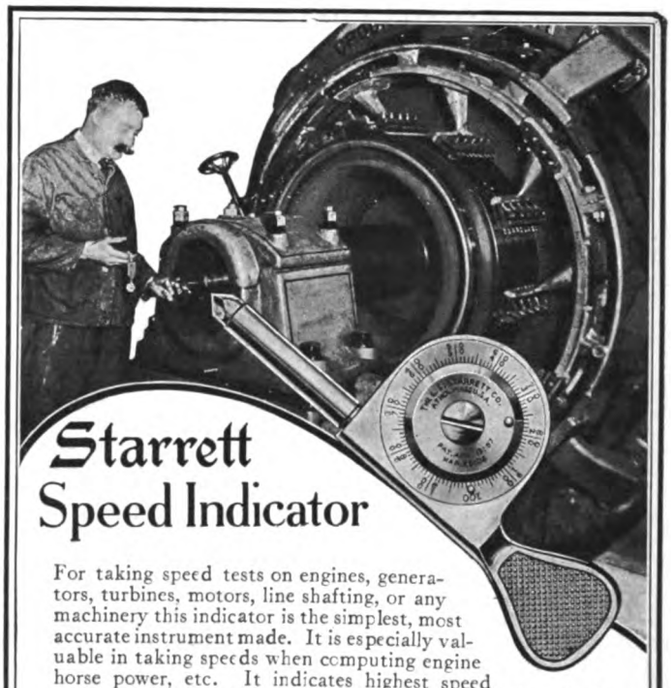
Propeller wheels and marine machinery are described in a catalogue published by the Sheriffs Manufacturing Company, Milwaukee, Wis. This catalogue states that more than 3,000 Sheriffs propeller wheels have been made up to this time.

The Barton expansion automatic steam trap, which is stated to be especially suitable for marine use, is the title of Catalogue 8 just issued by the Automatic Steam Trap & Specialty Company, Detroit, Mich. The question is asked in this catalogue, "Do you operate a steering engine?" and the following statement is made in connection with the question: "Barton traps relieve you of depending upon brakes or compressors with attendant strain on cables. It is common knowledge that engines have been ripped from deck while operating fast plants and no provision made for surging of steamer. Barton traps will put a stop to these steering engine episodes and provide dry steam at your command at all times. This saving will pay for several traps every season. Barton traps will conserve both coal and engine; will enable you to keep steam on all the while. Here is another practical example of the Barton trap keeping cylinders free of water and preventing escape of steam. Check valves replace cylinder cocks. Does it require any stretch of imagination to figure how much simpler this plan is? Consider, too, the appreciable saving."

Universal "Ilanasilk" life-saving equipments are the subject of an illustrated pamphlet just published by the Robinson-Roders Company, Newark, N. J. "Universal Ilanasilk life preservers, pillows, mattresses, cushions and ring buoys are made of specially selected material with the view of lightness and strength combined. There is little strain on them ordinarily, but they are nevertheless made strong and carefully inspected in every particular. Universal life preservers for air boatmen and speed boats have met with marked success. They are used by aviators over water and in speed boats, particularly in racing events. The Universal Standard life preservers are made to fully comply with the requirements of the motor boat laws. They will support a person for a much longer time than human life can endure in the water. The average person weighs but 2½ pounds in water, and the Universal Standard life preserver will support over 20 pounds, so that a person with this life preserver on may support several persons at the same time in the water. You want a life preserver at the right time and right place. Universal life preservers hold the head and shoulders up—the right place to apply support. They may be put on after capsize in the water while persons are fresh, and will hold them up when weak and exhausted—the right time. Universal life preservers with khaki casings are equally as useful for swimming, surf bathing, women and children in water, long distance swimming, etc., as for motor boats, canoes, sailboats, yachts, working boats, tugs, steamers, barges, etc. They will prove their remarkable value wherever and whenever used in water."

"Boiler Cleaning Logic." This is the title of a handsomely illustrated 34-page catalogue just issued by the Bayer Steam Soot Blower Company, St. Louis, Mo. The following statements are taken from this catalogue: "Previous to the invention of the Bayer Soot Blower System, the ineffective steam-hose-hand-pipe contraption was the only method known and used for removing soot from the heating surfaces of boilers. This arrangement is equally inefficient, laborious, time-consuming and expensive on boilers of the side-cleaning door type and those of the hollow staybolt type. Our remarks here, however, are confined to the latter. The principle by which dust and soot are supposed to be removed by the hand method is that of the direct action of a single jet of high-pressure steam. This principle is glaringly ineffective and inadequate, primarily because of the great amount of time and labor necessarily involved. Also because the force of a single jet only serves to disturb the soot in a small area at one time, and it does not accelerate the draft sufficiently to carry out all of the soot. A part of it settles again on the tubes, so that when the process has been gone through with, the boiler has actually been only partly cleaned. Anyone familiar with the hand method of cleaning will appreciate the utter impracticability of attempting to clean the boiler more than once daily by this method. Hand cleaning, therefore, cannot be employed as frequently as the real needs of the object to be accomplished requires. In order to maintain the highest efficiency in a boiler, it is absolutely essential that the accumulations of soot be removed from the heating surfaces at least two or three times daily. The necessity of frequent cleaning will, perhaps, be better appreciated when the fact is considered that soot has about five times the non-conductive power of asbestos. Soot colects and covers about 40 percent of the tube surface, or nearly half of it. A layer of 1/32 of an inch thick means that the conditions of inefficiency would be equal if the upper half of the tubes were covered with a layer of asbestos 5/32 of an luch thick."



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Speed Indicator

For taking speed tests on engines, generators, turbines, motors, line shafting, or any machinery this indicator is the simplest, most accurate instrument made. It is especially valuable in taking speeds when computing engine horse power, etc. It indicates highest speed without heating. Parts are enclosed like a watch. Made in three styles—prices, $1.00, $1.50 and $3.00.

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World's Greatest Toolmakers
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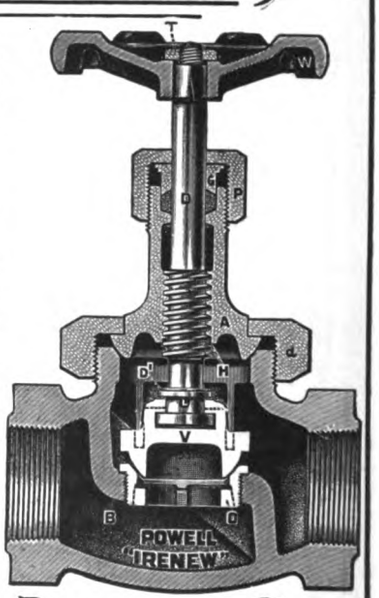
POWELL VALVES
(Especially The "White Star" Valve)

Get Acquainted with the Service Given by the New Powell 'IRENEW' Valve

You will find it well worth your while.

Note: The special features of this **new "Irenew" Valve shows the Disc and Seat Ring cast of White "Powellium" Bronze** which insures long life — the bevel ground joint connecting body and bonnet, swivel union nut, thread on outside of valve body where steam can't reach them.

Red lead or cement is unnecessary to make it tight.



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THE WM. POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES.
CINCINNATI, O. 2-6

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Use the experience of others in the treatment of boiler scale and you will use

DIXON'S BOILER GRAPHITE

Saves disagreeable work and makes cleaner boilers. Booklet No. 75-T upon request.

Made in Jersey City, N. J., by the
JOSEPH DIXON CRUCIBLE CO.
Established 1827

Drop forgings are described in an illustrated circular issued by Thomas Laughlin Company, 143 Fore street, Portland, Me. "After years of practical experience in the manufacture of drop forgings, we have succeeded in formulating a special analysis for the steel used in their construction that produces the greatest efficiency possible. As the material shown is generally used in the construction of derricks, steam shovels, dredges and other equipment, cable-ways, transmission lines and other construction work, it is important that material of quality be used so as to obtain safety and efficiency when the equipment is in operation. We recommend our forgings because we have proved them. They are now in use in some of the largest construction work in this country. We have our own galvanizing plant, and all material, when required, is galvanized by the hot-dip process. Our solution containing only the best materials, produces a rust-proof surface on the forgings that has passed the A. T. & T. tests. Our No. 75 catalogue contains cuts of other forgings in addition to those shown on this sheet, and upon request we will gladly mail you a copy."

American graphite pencils—for everything that a pencil can be used for—are the subject of a 48-page fully illustrated catalogue just issued by the Joseph Dixon Crucible Company, Jersey City, N. J. Everyone one knows Dixon pencils and most people use them, but few people who have not read this catalogue know the great number of styles, qualities and finishes of the pencils, crayons and erasers which the Dixon Company makes, and which are designed to suit requirements to the utmost exactitude. Send for a copy of this catalogue and you will be interested.

"Variable Voltage Arc Welders" is the title of Bulletin A, just issued by the Welding Materials Company, 114 Liberty street, New York. "The use of the electric arc for welding is rapidly becoming the standard method of joining sheet metal of all thicknesses, reclaiming castings, repairing broken machinery of all kinds, welding seams in new boilers, tanks, etc., repairing boilers, welding up angle-iron machinery frames (taking the place of riveting or bolting), welding side plates and roof joints on steel railroad cars, locomotive repairs of all kinds, annealing hard castings when in place on machine tools, thus saving removing and resetting. Burning out broken taps and welding in new material, melting away parts of castings, thus saving chipping, and many other purposes that even the users of arc welding apparatus have not yet thought of. We, therefore, predict that within the next few years an arc welding equipment will be considered as a necessary tool and in the same class, as far as usefulness is concerned, as a lathe, planer, drill press or other important tool."

"Pneumatic Flanging Machines" is the title of an illustrated catalogue of 18 pages just published by the McCabe Manufacturing Company, Lawrence, Mass. In this catalogue the company presents photographic illustrations of work actually flanged by the McCabe machine in different shops, together with references from many large and successful plate working establishments, with which to prove the company's claims. Among the illustrations of work actually performed are some heads for rectangular tanks, both with round corners and square corners; a round storage tank, 10 feet in diameter, ½ inch thick, the head of which has been flanged with the McCabe pneumatic flanging machine; a special tank, showing irregular flanges, made with the same machine; some dished heads, ½ inch in thickness, which were flanged cold; a cone bottom for a rendering tank, and others. The company states that with this method of flanging it is possible to flange plates any length or width and up to ½ inch in thickness cold. This class of flanging is stated to be especially valuable in smoke flues, rectangular up-takes, fireboxes for portable boilers, bulkheads, partitions and deck plates for ship work, etc. The catalogue states that round corners up to 8 inches radius and all thicknesses up to ½ inch are flanged in one heat and with one turn of the bender, and that this operation may be performed on rectangular plates that have been flanged on two or more sides previous to the corner. The company says that although the combination of a hand forge and this pneumatic flanging machine is effective for this work, its special oil heater will give more speed. Among the testimonial reports are some from the Standard Oil Company, the Hodge Boiler Works, East Boston, Mass.; the Christopher Cunningham Company, Brooklyn, N. Y.; the Quaker City Iron Works, Philadelphia; the New England Iron Works, Boston, Mass.; the Scannell Boiler Works, Lowell, Mass.; Michael Fogarty, Inc., New York; the Struthers-Wells Company, Warren, Pa., and others.

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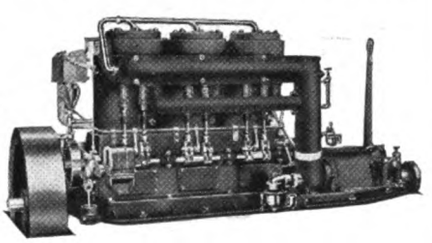

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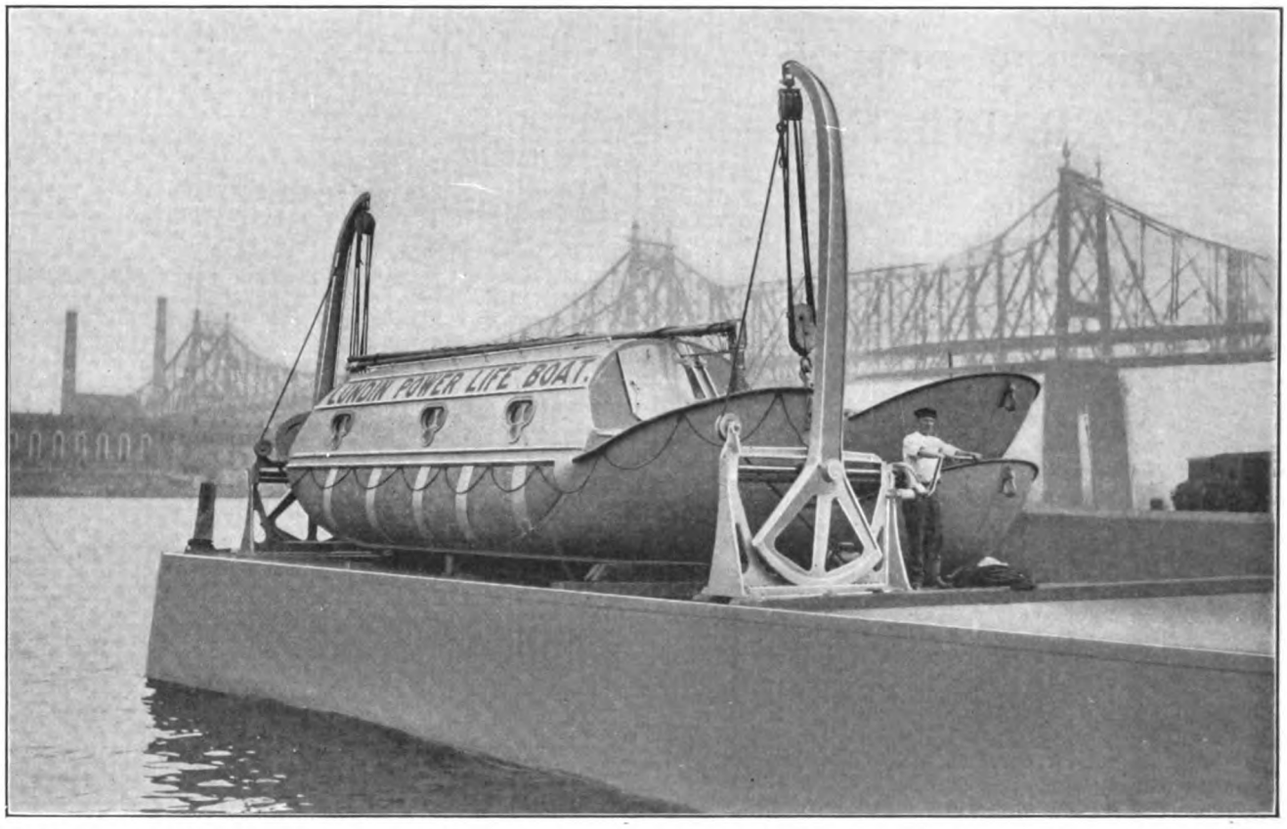
This system comprises:—Improved Standard Open Lifeboats, Lundin Decked Lifeboats, Lundin Power Lifeboats, all under Welin Quadrant Davits, Non-toppling Blocks, Lundin Davit Falls, Mills Releasing Gear, Tilting Chocks with Automatic Gripe Release. It is the ONLY COMPLETE SYSTEM in the world to-day.



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Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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Tools for the boiler maker are the subject of a number of bulletins published by the Ingersoll-Rand Company, 11 Broadway, New York. Bulletins 3030 and 3024 illustrate and describe the Ingersoll-Rand line of air compressors, ranging in size from three to 60,000 cubic feet pressures up to 2,000 pounds. Bulletin 8013 describes "Little David" chippers and scalers. Bulletin 8011 is devoted to "Little David" riveters, and states that this line of hammers will drive rivets up to 1¼ inches, steam-tight, quickly and cheaply. These riveters may be had with inside or outside triggers, also with or without safety retainers. Bulletin 8207 describes 29 combinations of "Little David" drills for drilling, reaming and tapping metals, boring in wood, flue rolling, stud seating, and many other purposes. Bulletin 8006 describes the "Imperial" hoist. This is built in five sizes, and according to the manufacturer assures economy and safety in shop operations.

Two Useful Tools.—W. D. Forbes, 236 Hempstead street, New London, Conn., has put on the market a center punch and has published an illustrated circular describing it. Both ends of this punch are hardened, and the knurling is nice and sharp and the workmanship and material of the best. The price, prepaid to any part of the United States, is only 10 cents. Another tool described by Mr. Forbes in the same circular is a surface gage, of which the following statement is made: "A quick, vertical adjustment is obtained by sliding the arm up and down the column and securing it in any desired position by tightening a knurled thumb screw, the thrust of which is taken on a copper washer, which prevents the column from being bruised. A coarse, quick, vertical adjustment of the needle is obtained by loosening a knurled thumb nut, which permits the beam to be tilted on the arm, the thumb-nut holding it securely in position. The out-reach of the needle, which is ⅛ diameter, can be adjusted by sliding it in and out by loosening the knurled thumb-nut shown under the left-hand end of the beam. A micrometer adjustment of the needle is obtained by turning a knurled nut shown in the jaws of the beam at its right-hand end. The base is drilled with two ⅛-inch holes, in which plugs can be placed when the gage is used to set work parallel to the edge of a planer bed or other machine, or where it is more convenient to use the gage on the rail of a planer than from the face of its platen. Price, net, to any part of the United States, $1.25."

"Less Bunker Space Equals Greater Cargo Capacity." This is the statement made at the top of a circular published by the Locomotive Superheater Company, 30 Church street, New York. This company states that from 10 percent to 20 percent less coal is burned and the same speed maintained by steamers whose boilers are equipped with the company's flue-tube marine superheaters than would be possible with the same steamers using saturated steam. "You need not wait for new steamers before availing yourself of these advantages, as the superheater may readily be installed in existing boilers. Let us submit designs."

Drag line excavators are the subject of Catalogue 15, published by the Monighan Machine Company, 2016 Carroll avenue, Chicago, Ill. "The drag-line is the most recent type of excavator that has attained extensive use. The wide radius of action of this machine, combined with its carrying a form of bucket less complicated in design and lighter in weight, in proportion to its load, and its ability to dig a ditch nearer to templet than other forms of dipper or bucket excavators, have demonstrated the greater economy of the drag-line in many kinds of work. This excavator is now recognized by excavating contractors as the most practical and economical machine for digging many kinds of drainage and irrigation ditches, canals anl laterals; for a large amount of levee construction, railroad fills and embankments; for excavating large areas for heavy building and dam foundations; for stripping and digging gravel and ore and many other uses. This machine will dig under water and will excavate any kind of material that can be dug with a dipper dredge or steam shovel. In digging ditches this excavator not only produces better slopes than is possible with steam shovels or dipper dredges, but because of the greater length of boom the spoil is placed further from the prism of the ditch, producing wider berms, and therefore forming a channel less liable to be filled by erosion. In levee and dam construction, experience has proved that this machine will build as compact an embankment as can be made by any other method. The excavator usually rests on the center line of the ditch ahead of the excavation and backs away from the work; although, in some conditions, such as cleaning ditches and levee building, it operates from the side of ditch or barrow pit. The ground on which the machine rests is always the driest part of the work, because it is always located in a position from which there is freest drainage."

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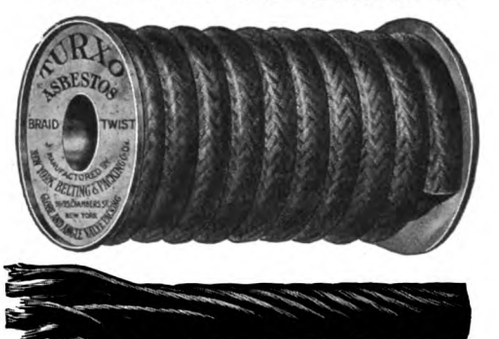

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Mr. Simon Lake, Inventor of the Lake Submarine Boat, is writing a series of articles entitled

Modern Submarines and Submarine Appliances in War and Peace

These articles are written exclusively for INTERNATIONAL MARINE ENGINEERING and will begin in our July number. The subject will be treated about as follows:

Modern Submarines and Their Principles of Construction and Operation.

Motive Power of Submarines, Treating Generally of Engines, Steam, Internal Combustion, Compressed Air, Chemical Boilers, Storage and Primary Batteries.

Types of Submarines in Different Navies, General Description of the Newest and Most Up-to-date Vessels. Tactics of Submarines.

Possibilities in the Coming "War Submarines," Their Probable Line of Development. Effect of Submarines on the "Control of the Sea" and its Tendency to Force and Maintain Peace between Maritime Nations.

Some Speculations as to the Future Type of Surface Vessel to Avoid the "Submarine Peril."

Possibilities of Submarine Boats in Peaceful Pursuits, Exploration, Transportation between Ice-Bound Ports, Hydrographic Work, Scientific Investigations of Sea Coast Bottom Conditions, Recovery of Foodstuffs, Wrecking, Recovery of Lost Cargoes, Submarines in Pearl, Sponge and Coral Fisheries, Submarines in Dredging Operation in the Recovery of Minerals, Asphalts, Fertilizers, etc. Submarines in Improving Waterways. Construction of Submarine Tunnels.

The subscription price of INTERNATIONAL MARINE ENGINEERING is $2 per year domestic and Canada ($2.50 foreign). Mr. Lake's articles alone will be worth many times this. Send us your subscription at once, so as to be sure that you receive every instalment. Address:

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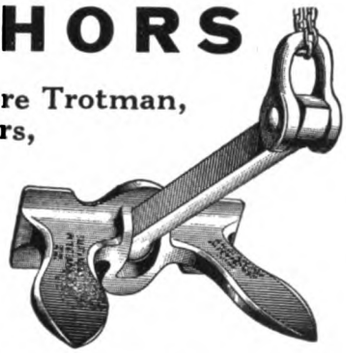

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1,000,000 lbs. constantly carried in stock. Can turn out 100,000 lbs. per day. Used extensively in the U. S. Navy.

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We also carry in stock about 2,500,000 lbs. of second-hand studlink chain 1½" to 2¾". This chain will meet Lloyd's requirements if desired.

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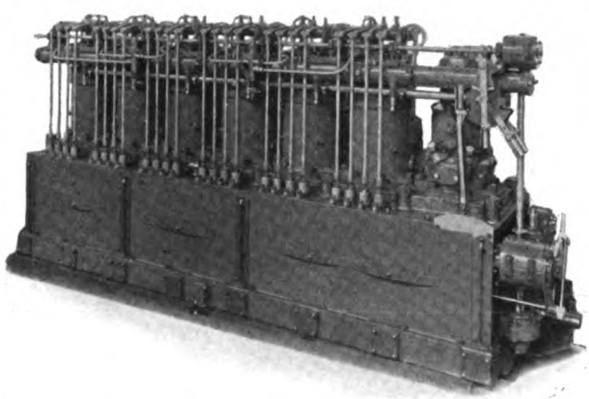

6-cylinder, 4-cycle Type. Direct Reversible.
Sizes, 200 H. P. and up.

Desirable for Propelling All Types of Vessels

Economies so pronounced that present unprofitable practises can be made practical successes.

JAMES CRAIG ENGINE & MACHINE WORKS
807 GARFIELD AVE., JERSEY CITY, N. J

The McNab Company, Bridgeport, Conn., has published some abstracts from letters received regarding the operation of "Cascade" boiler circulators and fuel economizers on a large number of ships, both on the Great Lakes and on the Atlantic and Pacific oceans. This circular makes interesting reading, and a copy will be sent to any of our readers sufficiently interested to write for it.

"Forcing Presses" is the title of Catalogue No. 92 just issued by the Watson-Stillman Company, 50 Church street, New York. This is a profusely illustrated catalogue of 128 pages. The company states in the preface: "Our line of hydraulic tools is so general and the illustration of the various machines so numerous that we find it convenient to divide the tools into classes, making each class the substance of a catalogue. At the back of this book is a list of these classified catalogues, any of which will be mailed upon application. We have built a great number of special tools which cannot be included in our general classes and are therefore not advertised. If the manufacture of your product demands a special apparatus we would remind you that our large equipment and experience have particularly qualified us to design and build the best tool for your requirements."

"Engineering Bulletin No. 10," the Peterson power plant oil filter and accessory apparatus for central oiling systems, is the title of a 32-page catalogue recently issued by The Richardson-Phenix Company, Milwaukee, Wis. This catalogue describes the construction and operation of the new Peterson power plant oil filter, and it is stated that filters of this type having a total filtering capacity of over 1,500,000 gallons are now in operation. Curves are reproduced showing the results of some interesting tests made on oil taken from one of these filters, and a chapter on the necessity of using filters in connection with steam turbine oiling systems contains much new information. The catalogue contains fifty illustrations, showing many important installations of Peterson filters and oiling systems. Copy may be had by addressing the company as above.

The Niagara portable sand blast and combination spray is described in a folder published by the Niagara Devices, Inc., 119 Dearborn street, Buffalo, N. Y. Under the heading, "What you will save," the following statement is made: "Seventy-five percent in labor cost and in time; one unskilled laborer will clean with our blast as large a surface in a day as six men can by scraping and brushing; a 50-ton all-steel hopper car can be cleaned in three and one-half hours by one man with a Niagara sand blast; smaller work with equal rapidity. Cost of sand, the same sand, when sifted, can be used again. Ninety percent in time; a man with a Niagara paint spray will paint as large a surface in one hour as painter (hand-brush method) will in ten hours; a 12,000-gallon tank car can be painted one coat, tank, frame and trucks complete, in thirty minutes. Brushes—the money saved on brushes alone will soon pay for the Niagara paint spray."

The Paige & Jones Chemical Company, 51 East Forty-second street, New York, has put on the market a boiler feed-water treatment, and in a circular just published makes the following statements concerning it. "If you are troubled with scale in your boiler or pitting of flues you can obtain quick relief by the use of F F F boiler feed water treatment. This treatment is used exclusively in the locomotive boilers of some of the largest railroads of the country, which is the best recommendation that can be given. The cost of treating the water in the stationary boilers is about 5 cents per hundred horsepower per 12 hours. F F F boiler feed water treatment is put up in pound balls in very hard form, which dissolve quickly when placed in a pail of hot water. It is then fed into the boiler in the usual way. About one-half to 1 pound per hundred (100) horsepower per 12 hours is sufficient to clean up a boiler and keep it in excellent condition. In addition to several chemicals F F F boiler feed water treatment contains a quantity of the very best grade of amorphous graphite. The chemicals tend to soften the water and loosen the scale on the flues and sheets. The hot metal then becomes coated with a thin film of graphite, which, when wet, is very slippery and upon which new scale will not form. It, furthermore, protects the metal from any sulphuric acid that may be in the water, and thus prevents corrosion and pitting. The scale is not removed from the metal in hard form but is softened by the chemicals and passes off in the form of sludge. The least circulation in the boiler keeps the graphite in suspension, and the graphite, being of a slippery, quicksand nature, does not permit the mud and sludge to settle and become hard in any part of the boiler. In opening the blow-off cock, which should be done each day, the greater part of the sludge and mud is carried out of the boiler."

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Portable and switchboard indicating instruments are described in Bulletin No. 8, published by the Weston Electrical Instrument Company, Newark, N. J. The several models and ranges offer a selection from over 300 different combinations.

"Fighting the Slides at Panama." This is the title of a circular published by the Bucyrus Company, Postoffice Box C, South Milwaukee, Wis. In the circular the statement is made that the Government engineers are relying on Bucyrus dipper dredges to fight the slides at Panama. Two 15-cubic yard Bucyrus dipper dredges (the largest ever made) have borne the brunt of the work ever since the water has been let into the canal. They have proved so successful that a third dredge of the same size has been ordered and is now under construction.

The Never Slip safety clamp, for handling boiler plate, is described in a catalogue which has just been issued by the Never Slip Safety Clamp Company, 141 Broadway, New York. "The Never Slip safety clamp is superior to any other clamp ever put on the market, combining great strength with absolute safety and considerable saving in time and labor. The clamps are made of high-class open-hearth steel and are annealed. They cannot slip, but give a strong, tight grip and are very easily attached or removed. With the vertical clamps we advise extreme care when setting the plate on floor, as when the plate touches the floor the clamp will loosen and the plate falls out. Size No. 1 horizontal clamp will lift plates up to ¾ inch htick, and has a capacity of 6 tons per pair, or being able to lift 400 square feet of plate with absolute safety. Weight per pair 10 pounds; corrugations on jaw. Size No. 2 horizontal clamp will lift plates from ¾ inch to 1½ inches thick, and has a capacity of 9 tons per pair, thus being able to lift 300 square feet of plate with absolute safety. Weight per pair 30 pounds. Size No. 3 horizontal clamp wil lift plates from 1½ inches to 2 inches thick, and has a capacity of 12 tons per pair, thus lifting 300 square feet with absolute safety. Weight per pair 72 pounds. The vertical plate clamps are made also of high-class open-hearth steel and are annealed. Size No. 1 vertical clamp will lift plates up to 1 inch thick and has a capacity of 4 tons. Weight per pair 44 pounds; corrugations on jaw. Size No. 2 vertical clamp will lift plates from 1 inch to 2 inches thick, and has a capacity of 9 tons. Weight per pair 84 pounds; corrugations on jaw. Invaluable to boiler makers, rolling mills, foundries, tank constructors, ship yards, or any plant where plates or metal sheets are handled. By their use costly accidents are avoided."

Gas engines for work boats are described in a catalogue published by the Standard Motor Construction Company, 120 Pine street, Jersey City, N. J. The catalogue states that the large and rapidly increasing number of Standard-engined work boats indicates that it may be the most practical and economical engine for your boat.

An interesting set of pictures, showing the launchings of the U. S. S. *Pennsylvania, New York* and *Wyoming*, will be sent to any of our readers who will write to Fiske Bros. Refining Company, 24 State street, New York, and mention INTERNATIONAL MARINE ENGINEERING. In the launching of these boats Neptune launching grease and Neptune stearine, made by Fiske Bros., was used.

Concrete piles for docks and piers are described in a circular, illustrated in several colors, which has been published by the Raymond Concrete Pile Company, 140 Cedar street, New York. "Raymond concrete piles are placed by means of a collapsible steel mandrel or core, which is encased in a spirally reinforced sheet steel shell. The shell-covered core is driven to proper resistance in accordance with the *Engineering News'* formula for pile driving. The core is then collapsed and withdrawn from the shell, leaving a stee-lined hole in the ground. The shell remains in the ground and is filled with concrete, thus forming a complete Raymond Standard Concrete Pile. The purpose of the spirally reinforced shell is multifold, to wit: 1, it maintains the compression set up in the soil by driving; 2, it prevents the admixture of extraneous matter with the concrete; 3, it prevents distortion or complete severance due to driving adjacent piles; 4, it prevents the washing away of cement from the concrete mixture by surplus ground water, or the absorption of the water from the concrete by dry or porous soils; 5, it provides a strong form for the concrete, maintaining the established principle requiring forms for green concrete; 6, it insures an absolutely perfect concrete pile of known size, shape and carrying capacity. No engineer will permit the placing of concrete in unstable material without the use of substantial forms. How much more important it is, when the concrete is placed below ground, where it is subject to the back pressure of various strata of soil which have been compressed to their limit and have not had time to assume an ultimate set under the new conditions. We shall be glad to discuss with you further, either personally or by letter, the details of your foundation problems."

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The ideal combination to use on the ways to insure a successful launching. These materials are used by all the prominent shipbuilders on the East and West Coasts for launching vessels of every description from barges to battleships. Write for particulars and prices.

Write for launching photographs of the U. S. S. "Pennsylvania", "New York" and "Wyoming".

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The highest quality oils and least expensive in the long run.

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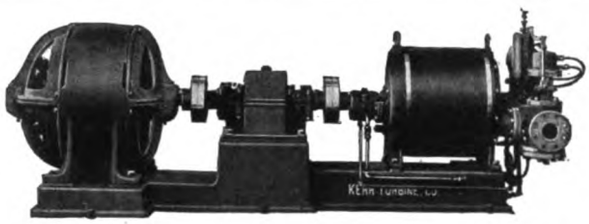

A year ago we boasted that of the several millions of buckets in daily use in

'ECONOMY' Steam Turbines

now in operation **not one bucket had ever loosened from its wheel,** under normal conditions of operation.

Another year has gone by, another half million **'ECONOMY'** turbine buckets have been put into service and we still point to this same remarkable record—**not one bucket loosened!**

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Rudderposts, stemframes and other sections can be welded with Thermit in a few days, thus returning your vessel to service quickly, saving thousands of dollars in dry dock charges alone. We have made a great many repairs to vessels of the Great Lakes, Coasts and Western Rivers. Full details are given in our new Marine Pamphlet 3425. Shall we send it?

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A comprehensive treatise on screw propeller design, showing how to estimate the power for propulsion of ships and calculate proportions of efficient propellers. A convenient chart system of design, devised by the author, is explained, and its practical application is discussed. Two volumes. Vol. I, 142 pages, 24 illustrations. Vol. II, 32 large plates. By Captain Charles W. Dyson, U. S. N. Price, $7.50.

For Sale by

International Marine Engineering 17 Battery Place NEW YORK

Climax marine engine oil and Climax marine cylinder oil are described in circulars which have just been issued by Fiske Bros. Refining Company, 24 State street, New York. The manufacturers state that these oils are of the highest quality, and that they are the least expensive in the long run. The company's engineer will be glad to consult with you, free of charge, on the subject of your oils.

A New Faessler Catalogue.—The J. Faessler Manufacturing Company, Moberly, Mo., has just issued Catalogue No. 33, and states: "If you want to be well posted on the latest sectional and roller expanders and cutting tools for boiler tubes and locomotive superheater flues, send for a copy of this catalogue. Aside from the description of Faessler tools this booklet contains much general information from which boiler makers can profit, and when in the market for new tools, remember our 60-day free trial to all responsible parties."

The oxy-acetylene welding and cutting outfits made by the Dyer Apparatus Company, Cambridge, Mass., are described in circulars the company has just issued. Among the outfits illustrated in this catalogue is the Style B welding and steel cutting outfit, which is described as being of unlimited range, both for welding and cutting. It is guaranteed suitable for every practical requirement of the boiler shop. The Dyer Apparatus Company will, upon request, send a list of boiler shops now using this apparatus.

The Kerr Turbine Company, Wellsville, N. Y., is distributing Bulletin No. 51, "'Economy' Geared Turbines," which explains the great advantages often obtained by interposing gears between turbine and driven generator, pump, blower or pulley, and also explains the new method by which "Economy" turbine gears are so accurately hobbed that no grinding or polishing is necessary for finish. Gears made in the Kerr shops are said to be so quiet in operation that the gears of an "Economy" geared turbine really make no more noise than the windage of a direct-connected outfit. A copy of this bulletin will be sent on request.

"From Holland to Sourabaya" is the title of an article in the April issue of *Plymouth Products,* published by the Plymouth Cordage Company, North Plymouth, Mass. "Those of yho who are acqainted with Plymouth cordage will not be surprised at the illustration of its strength and durability cited here. If it so happens that you are in the unacquainted class, the letter which follows and the map on the opposite page will give you plenty of food for thought: 'It is some time since we had the pleasure of communicating with you on business; the cause, however, has not been a lack of appreciation of the quality of your good Plymouth Rope. We still have a large stock to draw upon. The big 17½-inch rope with which we towed the 15,000-ton floating dock to Sourabaya gave very good satisfaction, and is still in good condition, ready for future use.' So much for the lteter—now glance at the map and at the table of distances printed in the corner. From Holland to Sourabaya is a journey of some 9,200 nautical miles. 'A long, hard pull,' the tugboat captains for our foreign friends would probably tell you, yet Plymouth made the entire trip without a mishap and finished with strength and life to spare."

"Sirocco" products are described by the American Blower Company, Detroit, Mich., in a profusely illustrated catalogue the company has just issued. The Sirocco fan occupies one-half of the space of the old-style fan; saves one-third the weight, one-fifth the power and does its work silently. Its drum forms a large inlet chamber. The air rushes into this chamber, and as the drum revolves rapidly these multi-blades bite into this volume of air in the inlet chamber and force it out through the spaces between the blades. Each blade drives a steady blast of air. High efficiency is attained because of the uniform action all around the circumference of the wheel, due to the large number of blades. In the following pages we describe some of the numerous ways in which Sorocco products are used, and show a few of the most prominent public buildings and industrial plants throughout the country which are Sirocco equipped. This Sirocco book gives you a general summary of American Blower Company products. We have prepared complete bulletins describing each one of these products at length. Tell us what you are interested in and we will mail you a carefully compiled book covering those subjects. A great majority of people have some kind of air-handling or air-conditioning problem to solve. It may be only ventilating an office, a home; it may be ventilating a mine, or heating a huge apartment building or industrial plant. Whatever your air-handling or conditioning problem, Sirocco equipment will solve it satisfactorily. Our engineers are familiar with every phase of heating, ventilating and air-conditioning problems. They will be glad to advise with you if you will give them the opportunity."

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A 20-inch hydraulic dredge is one of many dredges described in a catalogue issued by the Morris Machine Works, 33 Genessee street, Baldwinsville, N. Y. Four hundred and fifty-six thousand cubic yards were moved in one month by this dredge while at work on the New York State Barge Canal.

TRADE PUBLICATIONS

GREAT BRITAIN

Ship's tanks are described by the Shipley Tank Company, Ltd., 21 Dudley Hill, Bradford. These tanks are made up to one-fourth inch plate and 1,000 gallons capacity.

Caird & Rayner's improved vertical single-cylinder boiler feed pump is described in a bulletin Messrs. Caird & Rayner, Limehouse, London, E., have just published. The same firm makes evaporators, feed heaters, filters, etc.

Dredge plants of every description, and up to any capacity, are described by William Simons & Co., Ltd., Renfrew, Scotland, in a catalogue the company has just published. Among other dredgers are described bucket ladder hopper and barge-loading dredgers, suction cutter dredgers and hopper barges.

Gold, platinum and tin dredgers are the subject of an illustrated catalogue published by Arthur R. Brown, 54 New Broad street, London, E. Mr. Brown has supplied his dredgers during the last seven years, to the number of forty, in all parts of the world.

Howden's patent system of forced draft is described by james Howden & Co., Ltd., Scotland street, Glasgow, in a circular the company has just published. This system of forced draft is stated to be applied to the leading steamship companies of the world—over 14,000,000 indicated horsepower being fitted.

Loud-speaking naval telephones for battleships, cruisers, destroyers, yachts, liners and mercantile vessels, are the subject of a catalogue published by Alfred Graham & Company, St. Andrew's Works, Crofton Park, London, S. E. These telephones have been approved by the British Admiralty, many foreign governments and by leading steamship lines.

A positively controlled regulating and emergency throttle valve is described in a circular which has just been issued by Cockburns, Ltd., Cardonald, Glasgow. "Since the introduction of our patent combined main regulating and emergency throttle valve, some three or four years ago, the appreciation shown towards it by marine engineers has been most gratifying. Our experience during this period has led us to consider one or two modifications, the introduction of which we feel sure will appeal to our many good friends who have adopted our fitting, and also to those who have not been in a position to try this valve, but who may probably have known of it. In the original design there were two types of valve, one single beat and the other double beat. In the single beat type the valve had always to be operated through the medium of the throttle lever; that is, the hand-wheel herely set the lift or locked the valve shut, the actual movement of the valve being effected by steam controlled by the small valve. This, of course, was sometimes objectionable. With the new design, as illustrated above, the valve is a balanced double beat fitted with flexible risk, thereby making it absolutely steam tight. It is positively opened and closed by hand-wheel, calling for a minimum effort in these operations. When the valve is to be used as a throttle the locking gear for the positive opening and closing is detached, allowing the valve to be steam operated through the medium of the control valve. For this latter valve the mushroom type has been abandoned for a slide. The detail of the action is described later. In the original design the spindle between main valve and piston was in tension. With the new valve all parts are in compression. It is also much more easily overhauled—the valve can be taken adrift in about ten minutes. This has been a very careful consideration, and we feel sure will appeal strongly. We specially recommend this valve in conjunction with superheated steam."

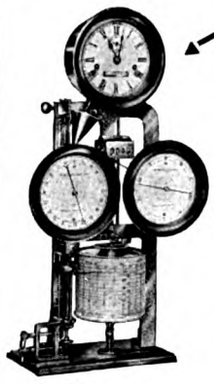
ASHTON Pop Safety Valves — The Quality Standard

ASHTON Steam Gages — The Accuracy Standard

No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

ROSS SCHOFIELD BOILER CIRCULATORS
OVER 3,000,000 HORSE-POWER INSTALLED OR ON ORDER
ROSS SCHOFIELD COMPANY
17 BATTERY PLACE NEW YORK CITY



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are by far the most accurate and efficient of all like devices. In addition to giving the mileage sailed, it shows the speed per hour on the dial and records this speed on a chart for every minute of the trip. These records can be dated and filed for future reference.

NICHOLSON RECORDERS are made for every type of vessel, from motor-boat to battleship and are exceptionally simple of operation.

NICHOLSON RECORDERS are found in every port in the world and are always highly efficient and economical. Catalog M is worth having. Send for it to-day. No obligation.

NICHOLSON SHIP LOG CO.
CLEVELAND, OHIO

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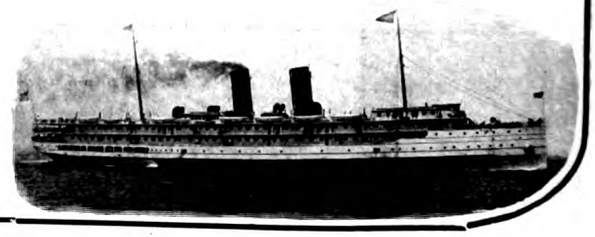

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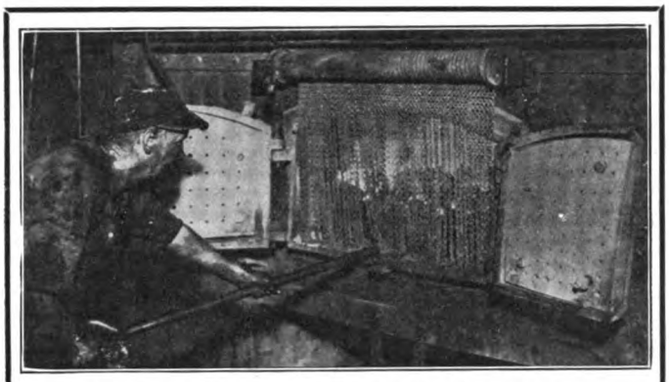

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An auxiliary furnace door for Marine and Stationary Boilers.

Keeps heat in and cold out, *saving fuel.*

Protects tubes, shell and brickwork, *saving repairs.*

Produces cooler fireroom and more contented stokers.

Opening furnace door, automatically covers opening with a screen of small steel chain, which is flexible, penetrable and transparent.

Protected from heat, with clear view of fire,

STOKER THROWS COAL THROUGH SCREEN WITH EASE.

Fires Cleaned Without Discomfort.

E. J. CODD CO. BOILER & MACHINE WORKS

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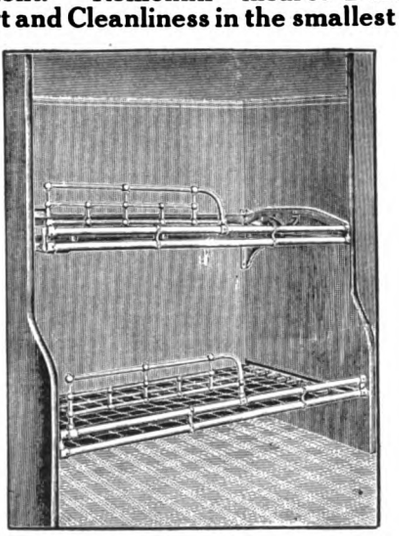
represent the highest types of modern Berth equipment. "Romelink" insures Durability Comfort and Cleanliness in the smallest space



Romelink No. 16 Folding
No. 17 Stationary

CATALOGUE UPON REQUEST

THE SOUTHERN BEDDING CO.

BALTIMORE, MD.

Dredger bucket pins are described in Circular M N 2, published by Edgar Allen & Company, Ltd., Sheffield. Messrs. Allen state that no better material has so far been discovered for dredger bucket pins than Allen's Imperial Manganese Steel. "By using it you secure long life and freedom from breakages in the bucket line; avoid vexatious delays by supplying it for pins and bushes and bucket lips.

BUSINESS NOTES

AMERICA

THE NEW YORK OFFICE of the Eckliff Automatic Boiler Circulator Company has been removed from 33 Broadway to larger quarters in the Singer building, 149 Broadway.

L. W. FERDINAND & COMPANY, Boston, Mass., manufacturers of marine glue, linoleum cements, etc., owing to the large increase in their business have moved from 201 South street, to 152 Kneeland stret, Boston, where they will occupy more than double their former space.

THE PEERLESS RUBBER MANUFACTURING COMPANY has moved from 16 Warren street, which it has occupied for many years, to 31 Warren street. The new location gives more floor space, which enables the company to meet with greater dispatch and convenience the demands of a rapidly expanding trade. The new premises are fitted throughout in a modern and complete manner. The company will be pleased to welcome any of its old "Rainbow" friends who may call at the new address.

ECKLIFF AUTOMATIC BOILER CIRCULATORS have recently been installed in boilers of the tug *A. B. Carpenter,* owned by the Northwestern Fisheries, Seattle, Wash., also the tug *H. A. Baxter,* of the Coastwise Dredging Company, New York City. Eckliff circulators were also installed in the Scotch boiler of the tug *Vidette,* Corps of Army Engineers, War Department, Philadelphia District; have also been ordered for six new ships building for the Coastwise Transportation Company, of Boston, at New York Ship Building Company. Eckliff circulators have also been incorporated in the specifications for the new lighthouse tender *Cedar,* which will be built by the Craig Shipbuilding Company. The boilers of the United States Coastguard cutter *Seneca* have been equipped with Eckliff circulators, and it is well to mention that since Eckliff circulators were installed the bottoms of these boilers have been covered to retain the heat units that exist in that area. An order has also been received from W. E. Meyer & Company, St. George, Bermuda, covering the installation of circulators in their steam tug *Gladisfen.* On the Great Lakes, Eckliff systems have been installed in the four boilers of the steamer *Eastland,* operating between Chicago and St. Joseph; also in the four boilers of the steamer *City of Benton Harbor,* of the Graham & Morton Transportation Company, operating between Chicago and Benton Harbor, Have also been installed in the boiler of the tug *Wau Bun,* of the Great Lakes Dredge & Dock Company, Milwaukee Division; in the dredge *No. 9,* of the Great Lakes Dredge & Dock Company, Toledo Division. The boilers of the United States army dredge *Burton,* of the Cleveland District Corps of Army Engineers, War Department, have recently received Eckliff equipment, as have steam tugs *Tavernilla* and *Gorgona,* recently completed at the Staten Island Ship Building Company for the Isthmian Canal Commission. The boilers of the steamer *A. W. Thompson,* W. H. Becker, Cleveland, manager, are now receiving Eckliff equipment Duluth, Minn. The tug *David Gibb,* of the North State Lumber Company, Charleston, S. C., and the Milwaukee, Wis., fire tug *No. 29,* are also listed among the recent Eckliff installations.

THE USE OF SPINDLE GREASE CUPS.—The Albany Lubricating Company, New York, sends INTERNATIONAL MARINE ENGINEERING this article on grease cups: "Since the first spindle cup made its appearance many styles and kinds of spindle cups have been used with more or less success. The original theory covering the spindle type of cup has, in many instances, been lost sight of, and the operation of the cup itself attributed to various makeshift theories which are without a sound basis. For instance, some advance the idea that the spindle resting on the shaft in a grease cup filled with a mineral or ordinary grease revolves, due to the rotation of the shaft, and in that way creates a disturbance in the midst of the grease in the cup, which causes the grease to flow and lubricate the bearing. This theory was never advanced on engineering experience. It is entirely unsound. Others have advanced the idea that the spindle in a grease cup filled with a

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mineral or ordinary grease, works in a vertical direction through the grease, and in that way is supposed to hop up and down in the cup, and practically poke or push the grease to the bearing. This movement of the spindle is supposed to be produced by the action of the shaft, which has some free play in the bearing. This theory is also unsound. The true theory, or the principle upon which the spindle cup acts, is a fundamental. The spindle type of cup should only be used with a solid lubricant possessing a low melting point. By that is meant a lubricant that will flow at a temperature ranging from 50 degrees F. to 175 degrees F. Never, in any instance, use in any make, style or kind of spindle cup a mineral or ordinary grease. The reason for this is that mineral or ordinary greases possess high melting points which are never under 200 degrees F., and often range far above this. The spindle should be of soft copper, sheathed from the bottom to about half its length with a corrugated piece of copper. As copper is a good conductor of heat, the copper-sheathed spindle, resting on the shaft, feels every fluctuation in bearing temperature. This, due to the high conductivity of the spindle, is readily impressed upon a low-melting point grease or compound which flows, reducing the bearing temperature to normal and then solidifies again. In this way practical, automatic lubrication is secured. The spindle vibrates but little, does not revolve and does not hop or jump in the grease cup. There are many different brands of mineral or ordinary greases sold to-day under 101 different names. There is advertised only one low-melting point grease on the market to-day. It is genuine Albany Grease, a pure tallow compound, possessing a low melting point which cannot only be used in spindle cups with great success but also in any other make or kind of grease cup."

MARINE REFRIGERATING PLANTS which produce a dry cold in the refrigerators, and keep food stuffs stored in them for an indefinite period without loss, are becoming more necessary, as is illustrated by the great number of plants being installed. The demand is for simple apparatus and for one which is at the same time efficient. In the past engineers have looked with little favor on a refrigerating plant, as they thought it was merely an addition to their labors. The concensus of opinion now among engineers is that a good refrigerating plant, well installed, requires practically no care, and the better foods served them are certainly well worth any care required by the plant. A very few minutes to start and a very few minutes to stop, and the oiling of the steam engine once in four hours, or even longer, is all that is required. One of the most successful, simple, efficient and economical plants built to-day is manufactured by the Brunswick Refrigerating Company, New Brunswick, N. J. This company has sold plants for 227 ships of all kinds, from yachts, fish boats, dredges, colliers and tank ships, to freight and passenger ships. The result is always a success, and they pay for themselves in a year, sometimes less, and perhaps a little more than a year. The American-Hawaiian Steamship Company has Brunswick plants on 27 of its steamships. The United States Government has plants on 38 vessels belonging to different departments. The Ellicott Machine Corporation has installed plants on 17 dredges built by them. The Luckenbach Steamship Company has plants on 9 of their steamers. The New York & Cuba Mail Steamship Company have plants on all eight of their freighters. The Prince Line have placed orders for equipping 8 of their steamers; some of these have already been equipped and the plants are operating. A. H. Bull & Company have plants on 9 of their steamers built or building. Others having more than one Brunswick plant are as follows: Texas Company, 6; Coastwise Transportation Company, 6; W. R. Grace & Company, 5; Crowell & Thurlow, 5; Standard Oil Company of New York, 5; New York & Porto Rico Steamship Company, 4; Hamburg-American Steamship Company, 4; Inland Lines, Ltd., 4; Ocean Freight Line, 4; Standard Oil Company of New Jersey, 3; Cuba Distilling Company, 3; Isthmian Steamship Company, 3; Matson Navigation Company, 2; Emery Steamship Company, 2; Barber & Company, 2; Booth Steamship Company, 2; Furst-Clark Construction Company, 2; Chesapeake Bay Steamship Company, 2; C. L. Dimon, 2; Union Sulphur Company, 2. The following have one boat equipped with a Brunswick apparatus: Merchants & Miners' Transportation Company, Clyde Steamship Company, Quebec Steamship Company, Hudson Navigation Company, Bowring & Company, Gulf Refining Company, Munson Steamship Company, Carpenter-O'Brien Company, Scottish-Mexican Oil Company, and many others. The Brunswick Refrigertaing Company will be very glad to furnish printed matter and a list of all steamers equipped with their apparatus to any one writing for same to them at their main office and works, New Brunswick, N. J., attention of the Marine Department.

IMPORTANT ARTICLES
PUBLISHED IN
INTERNATIONAL MARINE ENGINEERING

FEBRUARY, 1915

Self-Unloading Freight Steamer Huron. Illustrated.
Salvage Work on the Empress of Ireland. Illustrated.
Electricity on Board Ship.
Motor Ship Tongking. Illustrated.
New Ore Unloading Plant at Huron. Illustrated.
New Freight Carrying Steamer Van Hogendorp. Illustrated.
Tank Ship Construction.
Dyson Chart System of Propeller Design. Illustrated.
Trials of the Submarine Tender Fulton. Illustrated.
New Sea-Going Steel Tug. Illustrated.
Congestion of Freight at New York Piers. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers fo- Marine Engineers. Illustrated.
Letters from Marine Engineers:
- The Use of Silver Nitrate.
- Propeller Blade Layout. Illustrated.

Re-Floating the Steamship Zeeland by Compressed Air.

MARCH, 1915

Transfer Facilities at Marine Terminals. Illustrated.
Electric Trucking at the New York Terminal of the Southern Pacific Steamship Company. Illustrated.
Freight Handling at Railway Marine Terminals. Illustrated.
Handling Cotton With Electric Freight Trucks at Galveston. Illustrated.
Unloading Cargoes by Portable Machines. Illustrated.
Reservoir Effects in freight Movements. Illustrated.
Marine Terminal Machinery.
Points of Attack in the Terminal Problem. Illustrated.
Barge Canal Terminal. Illustrated.
Facilities for Shipping and Freight Handling at River Ports.
Freight Handling at Havana, Cuba. Illustrated.
Barges Equipped with Brownhoist Locomotive Cranes for Handling Coal. Illustrated.
Inclined Elevators Increase Economy of Marine Terminals. Illustrated.
Shipyard at Prince Rupert Terminal. Illustrated.
The De Mayo System for Cooling Ships. Illustrated.
Economy Gained by Handling Freight With Electric Trucks at Marine Terminals. Illustrated.
Lumber Operations on the Atlantic Coast. Illustrated.
Progress of U. S. Naval Vessels.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Insignificant Omission the Cause of Great Damage.
- Handy Kinks for the Engineer.
- Faulty Design of Marine Boilers.
- Instructions for Firing.

APRIL, 1915

French-Built Cable Ship Edouard Jeramec. Illustrated.
Refrigerating Plant on the First American Steamer to Bring Frozen and Chilled Meats from the Argentine. Illustrated.
New Southern Railway Coaling Pier at Charleston, S. C. Illustrated.
Construction of the Welland Ship Canal. Illustrated.
Stability of Vessels as Affected by Damage Due to Collision. Illustrated.
Installation of 120 Horsepower Bolinder Oil Engine in Pilot Schooner Gracie S. Illustrated.
Electric Towing System at the Panama Locks. Illustrated.
Introduction of a Modern Method in Shipbuilding. Illustrated.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers.
Two New Crandall Railway Dry Docks. Illustrated.
The Latest French Destroyers. Illustrated.
Output of Japanese Shipyards in 1914. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
The Old Navy and the New.
Letters from Marine Engineers:
- Economy of Coal and Boiler Corrosion.
- Interesting Change in Twin Screw Steamer. Illustrated.
- Preventing the Freezing of a Keel Condenser.
- Warship Construction in Navy Yards.
- A Criticism.

Recent Launches.
Marine Articles in the Engineering Press.
New Books for the Marine Engineer's Library.
Engineering Specialties. Illustrated.
Personal.
Selected Marine Patents. Illustrated.

MAY, 1915

Southern Pacific Ferry Steamer Alameda. Illustrated.
French Battleships Bretagne and Provence. Illustrated.
Launch of the Gulfcoast. Illustrated.
Speed Control on Dreadnought Pennsylvania. Illustrated.
Latest Developments in Marine Electrical Engineering.
Application of Electricity to Propulsion. Illustrated.
The Operation of a Marine Diesel Engine.
Annual Convention of the American Society of Marine Draughtsmen.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers. Illustrated
Loss of Submarine F-4. Illustrated.
The Craig Diesel Type Marine Oil Engine. Illustrated.
Weights of Solid Four-Blade Propellers. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers.
Letters from Marine Engineers:
- Shipbuilding in Navy Yards.
- The Present Position of the Marine Distallate (Paraffin) Engine. Illustrated.
- Gas Engine Needle Valve Settings. Illustrated.
- An Interesting Bit of History. Illustrated.

Marine Articles in the Engineering Press.
New Books for the Marine Engineer's Library.
Engineering Specialties. Illustrated.
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For Sale.—Good passenger and freight steamer (wood), 1,700 gross tons; 253 feet by 36 feet, canal size; great bargain. Address Fred G. Crosby, Milwaukee, Wis.

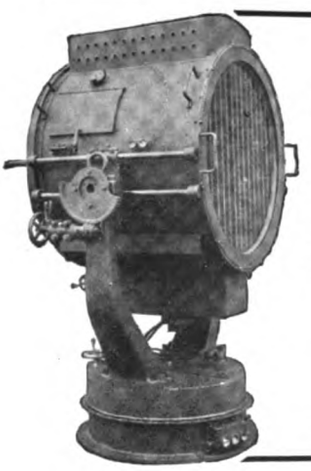
Mechanical engineer will be available by August 1 for position as works manager, superintendent, chief engineer or chief draftsman. Twenty years' experience, naval and merchant work in engineering department of leading shipyards of this country. Address *Engineer,* care of INTERNATIONAL MARINE ENGINEERING.

Wanted, to represent manufacturer in New York territory, by man well acquainted with the pump and power plant field. Several years successfully represnted a prominent firm. Address *A*, Room 322-E, 30 Church street, New York City.

THE CLOTHEL COMPANY, manufacturer of ice machines and refrigerating machinery, formerly of 11 Pine street, has removed its offices to Room 407, 90 West street, New York.

ANNUAL MEETING OF THE JOSEPH DIXON CRUCIBLE COMPANY.—The annual meeting of the stockholders of the Joseph Dixon Crucible Company was held at the company's office in Jersey City on April 19, 1915. There were present a large attendance of stockholders, who expressed their satisfaction with the present management and re-elected the former board of directors for the ensuing year. The vote recorded was the largest ever represented at an annual election—19,519 shares out of a possible 20,000. The following-named gentlemen are the directors elected: George T. Smith, Robert E. Jennings, George E. Long, E. L. Young, William G. Bumsted, J. H. Schermerhorn, Harry Dailey. The officers elected by the board of directors are: President, George T. Smith; vice-president, George E. Long; treasurer, J. H. Schermerhorn; secretary, Harry Dailey; assistant secretary and assistant treasurer, Albert Norris.

RECENT SALES reported by the Kerr Turbine Company, Wellsville, N. Y., include the following: City of Atlantic City, N. J., 18,000,000-gallon "Economy" turbo-pump; city of Baltimore, 500-kilowatt "Economy" turbo-generator; city of Williamsport, Pa., 425-horsepower turbine for driving a pump; city of Youngstown, Ohio, two 250-kilowatt turbo-alternators; dredge *Columbia,* port of Portland, Ore., two 100-horsepower geared turbines; Swift & Company, Chicago, three turbine units; Christian Moerlein Brewing Company, Cincinnati, 300-kilowatt turbo-generator; Carnegie Steel Company, Farrell, Pa., 125-horsepower turbine; Jones & Laughlin Steel Company, Woodlawn, Pa., 325-horsepower turbine; National Tube Company, Christy Parks Works, McKeesport, Pa., 350-horsepower turbine. Export orders include East Hull Gas Company, Groves, England; Corporation Gas Works, Birkenhead, England, and Armour de la Plata, Argentine.



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Made in any size and any candle power from the small yacht lamp, to the largest navy standard type.

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AMERICA.

AMERICAN SOCIETY OF NAVAL ENGINEERS
Navy Department, Washington, D. C.

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29 West 39th Street, New York.

NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS
29 West 39th Street, New York City.

UNITED STATES NAVAL INSTITUTE
Naval Academy, Annapolis, Md.

AMERICAN ASSOCIATION OF MASTERS, MATES AND PILOTS
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Sworn to and subscribed before me this 5th day of April, 1915.
OSCAR M. PICKRUHL.
(My commission expires March, 1917.)

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TRADE PUBLICATIONS.

AMERICA

"American" marine gages are among the large line of engineering specialties described in a catalogue published by the American Steam Gauge & Valve Manufacturing Company, Boston, Mass. Among other steam specialties described in this catalogue are pop safety valves, relief valves, indicators, etc.

The Chicago Pneumatic Tool Company, Fisher building, Chicago, Ill., has issued Bulletin 34-X, dated May, 1915, relating to Class A-G "Giant" gas and gasoline engines. The bulletin illustrates these engines in six sizes, ranging in horsepower from 16 to 130. The engines are similar in general design to the well-known Giant fuel oil-driven engines manufactured by the same company, with the exception that they are designed for operation with manufactured or natural gas. Their enclosed self-oiling features, extreme simplicity and perfect automatic regulation should recommend them throughout the field where manufactured or natural gas is available for power purposes. Copies of this bulletin and further information relative to these engines may be obtained by applying to the Chicago Pneumatic Tool Company.

The Ingersoll-Rand Company, 11 Broadway, New York City, has recently issued two new catalogues—Forms 3031 and 4034. The former is descriptive of the new "Ingersoll-Rogler" Class "FR-1" steam-driven, single-stage straight-line air compressors. The catalogue is profusely illustrated, showing the details of the machine in section. Among the principal features of construction may be mentioned the "Ingersoll-Rogler" air valves in the air cylinder and the balanced piston steam valve, with automatic cut-off control in the steam cylinder. The air valves are silent in operation and long lived, operate entirely independent of any driving mechanism, and require practically no attention. The steam valve represents the most approved design, permitting the use of the highest steam pressures and superheated steam. Form 4034 covers the type No. 26 Leyner-Ingersoll water drill. This drill resembles the larger successful Leyner-Ingersoll drill No. 18, but it is, however, considerably lighter in weight and intended for smaller diameter and shorter depth holes. Copies of both of the above catalogues free on request.

Port Orford Cedar—"Best for Boats," is the title of a very interesting circular which has just been published by the C. A. Smith Lumber Company, Oakland, Cal. According to the C. A. Smith Lumber Company, Port Orford cedar has been adopted by the United States Government and large industrial corporations where durability is the first requirement. It is stated to be a white wood with a close, firm grain that works easily, takes and holds any kind of paint, enamel or stain, does not water-log, shrink or warp, and is easily fastened. Samples will be sent upon request. The C. A. Smith Lumber Company owns and operates two sawmills in Southwestern Oregon, owns and operates steel steamers with a total carrying capacity per trip of 4,000,000 feet, that bring the product of their mills to market, and owns and operates a distributing plant that covers 225 acres, located at Bay Point on San Francisco Bay. This plant is located on the main lines of the Southern Pacific and the Santa Fe Railroads, and its facilities for reaching all markets are stated to be unequaled.

Turbine-driven centrifugal pumps, as installed by the Terry Steam Turbine Company, Hartford, Conn., are the subject of Bulletin No. 164, which that company has just issued. Among the Terry installations which this bulletin tells about is that on Graders Nos 1022 and 1205, used for the work of the Mississippi River Commission at Memphis, Tenn. The first grader used in that district was No. 1022, and on this Terry turbine-driven centrifugal pumps were installed, instead of the usual direct-acting plunger pumps. This grader was so satisfactory that similar equipment was adopted for Grader No. 1205. Among the reasons for this decision, according to Bulletin No. 164, are that turbine sets are much lighter and occupy so much less space that with this equipment the displacements and dimensions of the barge are greatly reduced over barges with the former type of direct-acting plunger pumps. The Terry turbine driving each of these pumps is of 165-horsepower capacity, embodying the latest improvements in designs. The case is split horizontally to permit ready inspection. The pedestals, resting upon the cast iron base plate, support both the turbine casing and the shaft bearings, thus preventing any changes in alignment, due to expansion, and maintaining constant clearance between the rotor and case. A 10-kilowatt Terry turbo-generator set is included in this equipment for furnishing lights to all parts of the barge, including the crew's quarters and the searchlight.

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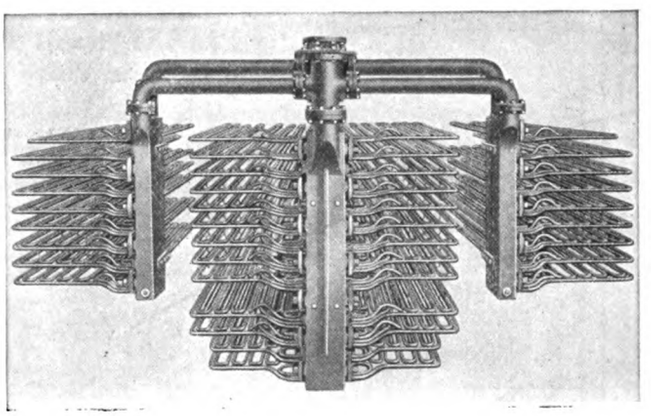

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"Power Plant Equipment" is the title of a handsomely illustrated catalogue just issued by Schutte & Köerting Company, 1253 North Twelfth street, Philadelphia, Pa. The catalogue describes the Köerting injector, the Schutte-Köerting eductor condenser, the Köerting multi-jet condenser, the Schutte-Köerting automatic stop check valve, Schutte automatic engine stop systems, the Köerting oil -firing systems, and other steam specialties.

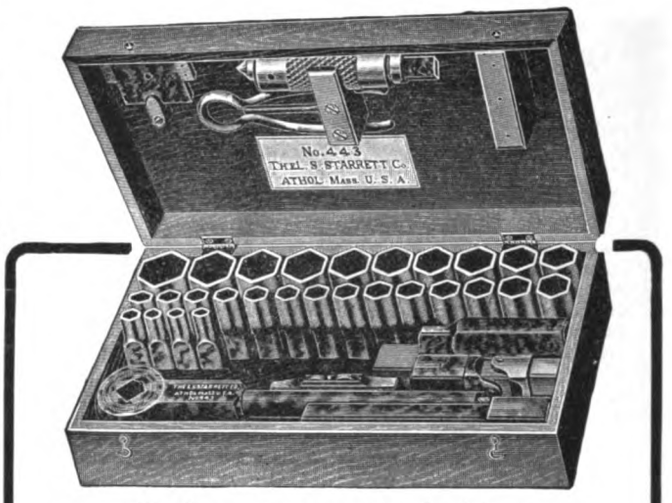
Wolverine Catalogue "73" has just been published by the Wolverine Motor Works, Bridgeport, Conn. This is a handsomely illustrated volume of 32 pages, and a copy will be sent to any of our readers upon request. "During the past twenty-eight years 'Wolverine' engines have been giving the most satisfactory service in commercial craft of all kinds. An engine that has proved its reliability for commercial work, such as prompt delivery of mail and perishable goods—fruit, fish, etc.—is eminently suited for use in pleasure craft where the lives of those on board—the owner, his family and friends—are at the mercy of the propelling engine."

"'Economy' Exhaust Steam Turbines" is the title of an illustrated catalogue just issued by the Kerr Turbine Company, Wellsville, N. Y. "The 'Economy' exhaust steam turbine utilizes exhaust steam from the main engine, pumps, air compressors, etc., for improving the steam economy and increasing the power output of reciprocating engine plants. An exhaust turbine is usually installed to take steam from a reciprocating engine or other prime mover at a back pressure of anywhere from 1 to 2 pounds gage, though if the exhaust steam is available at higher pressures the turbine can be designed accordingly. In any non-condensing engine, be it simple or compound, the introduction of an 'Economy' exhaust steam turbine will not only materially increase the total horsepower output, but will also result in greatly reduced steam consumption per horsepower delivered."

The Triton life buoy, invented by A. W. Brown, Elmira, N. Y., is the subject of a number of illustrated circulars which Mr. Brown has published. This life buoy is stated to be something entirely novel, and Mr. Brown says that if the *Lusitania* had been equipped with a carload of Triton life buoys they could have all been launched in five minutes. Mr. Brown makes the following statement regarding his buoys: "Triton buoys are constructed of sheet metal, either steel, bronze, aluminum or monel metal, and are made to stand the test. They are so simple in construction that a mere child can assemble and launch them as well as the first mate. Triton buoys should be seen in operation to be fully appreciated. Triton buoys will keep you warm and dry, and safe from the inclemencies of the weather when you are forced to abandon your sinking ship."

"Waterbury Armored Rope" is the title of an illustrated booklet just issued by Waterbury Company, 80 South street, New York. The uses of this rope are, of course, many. The following statement is made in the catalogue in reference to the company's armored rope in river and harbor work: "In river and harbor dredging where wire ropes are alternately wet and dry, and are frequently subjected to the deteriorating influences of salt water, the question of rope quality and rope construction is of prime importance. Another advantage is found in the fact that it is possible to use a wire rope core, or, in other words, a wire rope within a wire rope, as chafing between the inner rope and the outer or covering rope, is absolutely prevented by the flat wires. The extraordinary flexibility to be had from this construction, taking the breaking strain into consideration, has to be seen and tried to be appreciated. The flat wires are rolled from a special cold-drawn acid open-hearth round wire, which leaves the edges convex and prevents the wire crowding during the bending of the rope."

Seabury marine steam engines for commercial and pleasure craft are described in illustrated Catalogue 11-A, just issued by the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., Morris Heights, New York. "The Seabury marine engine is designed to meet the conditions required for marine propulsion, and is built in sizes ranging from 12 to 2,400 horsepower, in both compound and triple-expansion types. This range of sizes and types makes it possible to engine anything from the small 25-foot launch, requiring a small engine of cheaper compound type, to the large, commodious, ocean-going yacht, requiring triple-expansion engines of high power. The Seabury engine is of the side-valve shaft type, with spiral reverse gear. The reversing is accomplished by means of a hand lever for the smaller sizes and a steam cylinder for the larger sizes. Compound engines are constructed with the regular link motion. One of the advantages of the Seabury engines with the valves at the side instead of between cylinders, is that a short, compact engine is produced, occupying a minimum fore-and-aft space in the boat, an undoubted advantage in many cases."



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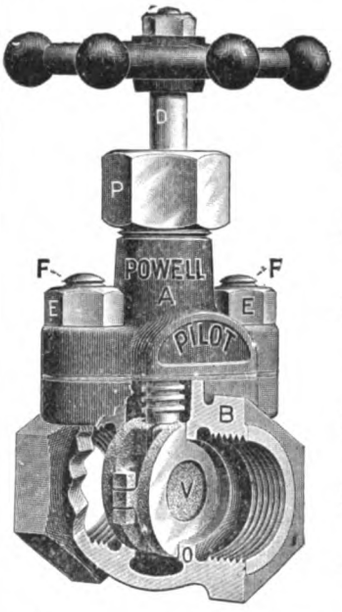

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Established 1827

T-27

Portable air compressors are the subject of Folder No. 3015 just issued by the Ingersoll-Rand Company, 11 Broadway, New York. This line of portable compressors has been developed expressly for those who employ air tools in connection with work of a temporary or semi-permanent character. The catalogue states that for such work where the installation of permanent equipment with its accompanying pipe lines and auxiliary appurtenances would be both inconvenient and expensive, the employment of these portable compressors will effect a considerable saving.

Welding high-pressure work is the subject of Bulletin B-4001, just published by the C & C Electric & Manufacturing Company, Garwood, N. J. The surest test of a heating system comes when making joints to stand high pressures. "C & C electric arc welding equipments have been used on work to withstand the highest pressures in commercial use. Joints made with this apparatus insure the greatest uniformity and highest strength, because of the great freedom from oxidizing elements and the possibility of doing absolutely uniform work because of our patented control system."

Morison suspension furnaces for marine and land boilers are described in a catalogue published by the Continental Iron Works, West and Calyer streets, Brooklyn, N. Y. These furnaces are made to United States Lloyd's, Bureau Veritas or any other requirements.

Instructions for installing and operating Chicago Pneumatic Class N-SO fuel oil-driven compressors form the subject of Bulletin No. 34-U, just issued by the Chicago Pneumatic Tool Company, Fisher building, Chicago, Ill. This bulletin constitutes an illustrated pamphlet of 24 pages, and should prove of considerable value to anyone interested in the subject discussed.

Smooth-On Iron Cement No. 7 is described and illustrated by the Smooth-On Manufacturing Company, Jersey City, N. J., in a circular the company has just issued. This cement is used in combination with Portland cement for permanently waterproofing all classes of brick or concrete construction, also for gasolene-proofing brick and concrete, oil-proofing brick and concrete, etc.

"Timely Hints to Employer and Employee" is the title of a circular which the Never Slip Safety Clamp Company, 141 Broadway, New York, has just published. This takes up the subject of accidents and diseases in the factory, and gives a number of useful hints as to how they may be prevented. Anybody wanting a copy of this folder may obtain it by writing to Mr. Q. I. Morton, care of the Never Slip Safety Clamp Company.

The Taylor forged steel boiler nozzle is described in a circular issued by the American Spiral Pipe Works, Chicago, Ill. This boiler nozzle is a one-piece forging of solid steel without weld. The sizes are 1½ to 8-inch pipe outlet. The saddle forge is curved to fit the required circle. Needless delays and rejections are claimed to be eliminated by its use, and also several other advantages. The American Spiral Pipe Works also makes corrugated furnaces, both land and marine type, besides forged steel boiler flanges, lap-welded steel drums and flues, etc.

The Lennox rotary bevel shear, for boiler, tank, railroad, car and shipbuilding plants, is described in circular No. 13,043 which has just been issued by Joseph T. Ryerson & Son, Chicago, Ill. Messrs. Ryerson & Son state, in connection with this bevel shear, "following our policy of keeping the design of our machinery always in the front rank, we have developed an improved design of our Lennox rotary bevel shear which is far ahead of anything before offered for plate work. A large number are already in use. It is made in two sizes with capacity up to 1-inch plate.

Dixon's motor graphite for motor boats, motor cars and motorcycles, is described in the May issue of *Graphite,* issued by the Joseph Dixon Crucible Company, Jeysey City, N. J. "Put up specially for motor cars, motor boats and motorcycles. Use it in cylinders, on chains, springs, tires, wheel rims, bearings and wherever friction occurs. May be used dry or mixed with oil or grease as required. Its use eliminates friction and wear of parts and increases power. Try it in place of talc in tires. Dixon's motor graphite is unique among lubricants. It is not a competing product with oil or grease, but the lubricating value of any oil or grease is always increased where it is possible to add the correct amount of Dixon's motor graphite. When properly used in cylinders it improves the compression, increases power, prevents valves sticking or pitting, greatly reduces the amount of lubricating oil required, and cures smoky exhaust. It will not carbonize. Sold in ½, 1 and 5-pound cans. Larger packages if desired."

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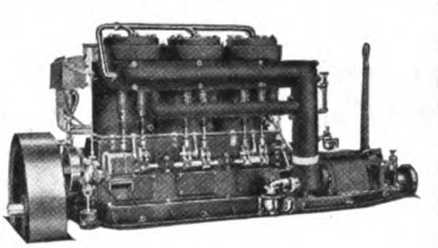

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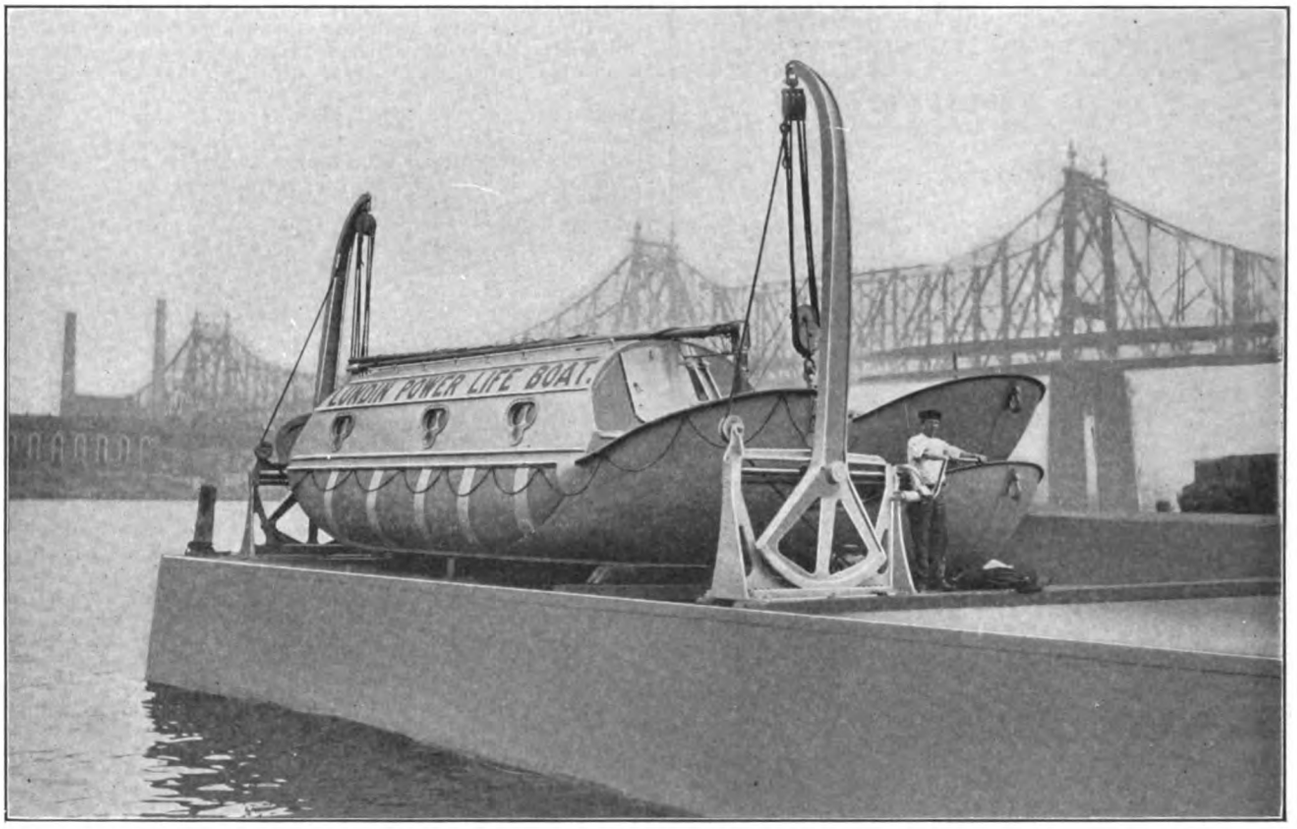

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Our engineers are experts in this line. They are at your service and will gladly co-operate with you to make your life-boat equipment EFFICIENT, DEPENDABLE and ECONOMICAL.

WELIN MARINE EQUIPMENT CO.

305 Vernon Avenue, Long Island City, N. Y.

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Rome staybolt iron and its high quality, due to a special process of manufacture, are described by the Rome Merchant Iron Mill, 30 Church street, New York, in a circular the company has recently issued. In this circular the statement is made that "A rotary squeezer is the best puddle boss. As the ball of puddled iron is brought from the furnace it is dripping with cinder. To expel this and roll the rough mass into shape for the rolling mill is the function of the squeezer. If the iron has not been properly worked the squeezer pulls it to pieces instead of rolling it up. It takes many processes and workings to make a high-grade staybolt iron."

A powerful and efficient punching machine is described and illustrated in a circular issued by the Cleveland Punch & Shear Works Company, Cleveland, Ohio. The particular machine described in this circular has recently been installed in a large Eastern boiler shop, and shows the machine arranged for punching a 6¾-inch by 11¾-inch hole in 1¼-inch plate. The jaw is so arranged that 18-inch by 24-inch holes may be punched if desired. The attachment shown is especially adapted for punching flanged heads from inside or outside, as the distance between the jaws allows sufficient clearance for deep flanges. If desired, the company will furnish flue hole and plate shearing attachments or adjustable multiple punching attachment for any kind of work. The treadle extending around the front of the machine and the hand lever conveniently located, permit operating under all conditions.

Small tools are described in Hand Book No. 5, published by the Cleveland Punch & Shear Works Company, Cleveland, Ohio. In this circular the company states that the fact that it builds punching machines designed to perform very heavy work gives it an unusual advantage in its small tool department, because it thus becomes possible to test its punches and dies under actual working conditions—in fact, to submit them to unusually trying strains that are rarely demanded in the ordinary run of the day's work. "In testing our punching machines we subject them to trials of the utmost severity, and by using our own punches and dies in these tests we are enabled to learn their full strength and capacity under conditions which would otherwise be impossible. We have profited by this practical experience, and the result is a line of small tools that is **unequaled.**"

"Riveters" is the title of Catalogue No. 3 just issued by the Hanna Engineering Works, 2077 Elston avenue, Chicago, Ill. "While we will not attempt to record the merits of the compression yoke riveter in general, we will state that no other machine has done so much to reduce the cost and bring to its present standard the structural, bridge, car and steel ship building industries. We take pleasure in issuing this catalogue showing how the Hanna type riveters have overcome the faults of the earlier types and in the firm belief that the details of design and construction must recommend them to the man who has to produce riveted work. For a great many years we have made a specialty of riveting machinery, and believe that our sales have far exceeded those of any other manufacturer of this line. Thus the purchasers of our riveters secure the benefit of design and workmanship which is due to our wide and diversified experience, and places us in position to offer valuable suggestions for complete installations as well as specially designed riveters for special work."

Regrinding valves are described in a bulletin published by the McNab & Harlin Manufacturing Company, 55 John street, New York. "M H regrinding valves are a very superior class of valves in design, material and workmanship, being manufactured under strictly modern methods and especially constructed to meet the requirements of government specifications, marine work, locomotive work and the highest class of power plant service. The metal used in the construction of these valves is of the very best quality steam metal, selected only after careful consideration of chemical, physical and durability tests to be the most satisfactory for use where conditions call for a valve of superior quality. This line of valves comprises globe, angle, cross, horizontal and swing check valves. In addition to these, we are prepared to furnish globe, angle and cross valves with semi-steel bodies; steam metal, monel metal or other nickel alloy trimmings. These valves are particularly adapted to power plant work, the semi-steel mixture having a tensile strength of 29,000 to 30,000 pounds per square inch. The quality of the composition trimmings is of equally high grade, and furnished in the different combinations to suit specifications. The additional feature embodied in this semi-steel valve is, the disk and seat ring of the valve can be very readily renewed without taking the valve off the line, as these parts are designed with the renewable feature, which increases the efficiency and service of the valves."

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What portion of this $70,000,000 are you getting—and would't you be glad to get more of it?

INTERNATIONAL MARINE ENGINEERING reaches the men in the shipyards and steamship and steamboat companies who do the buying for their organizations. The magazine goes to them every month and is read from cover to cover.

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Unequalled for joinery work, planking, decking, timbers, hold flooring, etc.

Thoroughly impregnated with nature's preservative,

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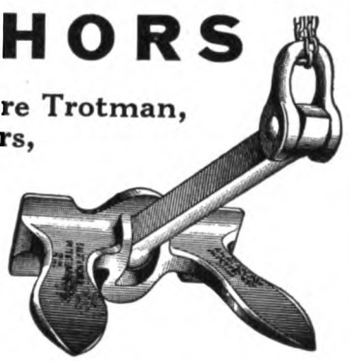
ANCHORS



We manufacture Trotman, Old Style, Rogers, Mushroom and Stockless Anchors.

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CHAIN

We also carry in stock about 2,500,000 lbs. of second-hand studlink chain 1½" to 2¾". This chain will meet Lloyd's requirements if desired.

Baldt Anchor Co., Chester, Pa.

A combination shear and punch for cutting angles, plates and bars, and also for punching operations, is made by the Covington Machine Company, 84 Wall street, New York, and described in a circular the company has just published. This machine is also built without the punch portion, or the company will substitute a shear for squares and rounds if preferred. The Covington Machine Company builds in addition all classes of punches, shears and rolls.

"Graphite as a Boiler Cleanser" is the title of a circular which has just been issued by the Paige & Jones Chemical Company, 51 East Forty-second street, New York. "Graphite, of itself, can have no chemical action on scale or boiler feed water and will not remove scale from the tubes or side sheets of a boiler. It will, however, if used each day, gradually form a thin graphite surface or film over the interior of boiler, which is of such a nature that new scale will not adhere to same. By the use of certain chemicals in combination with a pure graphite, the scale is so softened that the graphite will gradually work its way into and through the scale, getting to the metal and stuffing off the old scale, then by a daily application it will be possible to keep the boiler permanently clean. This graphite film or surface on the metal is a sure protection against an acid feed water, thus preventing pitting and corrosion. It will lubricate injectors, check valves, cylinders and preserve the packing, reducing materially the consumption of oil and fuel and increasing the life of the boiler. By using only a pure graphite and one so fine that it is at all times, during circulation of water, positively in suspension, it will become a part of the scale-forming matter and mud or sediment which is present, keeping same soft, so that a great portion of this can be blown out of boiler through blow-off cock."

"No More Broken Parts." This is the title of a circular just issued by Joseph T. Ryerson & Son, Chicago, Ill. "In all machine tools or implements there are some parts that are subject to excessive vibrating or alternat'ing shocks and strains. These parts are a continual source of trouble and complaint from customers and all users of your products. Nikrome steel, a special analysis nickel-chromium alloy, has been manufactured to overcome the breakage on all moving and other parts subject to severe service. Nikrome is a strictly homogeneous metal free from seams, pipes and other segregations which so frequently are found in alloy materials. It is used extensively for axles, t ransmission gears, stearing knuckles, crankshafts, connecting rods, locomotive parts, such as crank pins, side rods, main rods, piston rods, valve motion parts, spring hangers, also for bolts, keys or anything that requires resistance to strains. Nikrome is carried in stock in all standard sizes, cold rolled and heat treated. If you need a special steel for a certain part, advise us fully, and let our 'Special Steel Specialists' recommend a material exactly suited to your requirements. We are constantly solving special steel problems for manufacturers and should be able to solve yours."

The Never Slip safety clamp, for handling boiler plate, is described in a catalogue which has just been issued by the Never Slip Safety Clamp Company, 141 Broadway, New York. "The Never Slip safety clamp is superior to any other clamp ever put on the market, combining great strength with absolute safety and considerable saving in time and labor. The clamps are made of high-class open-hearth steel and are annealed. They cannot slip, but give a strong, tight grip and are very easily attached or removed. With the vertical clamps we advise extreme care when setting the plate on floor, as when the plate touches the floor the clamp will loosen and the plate falls out. Size No. 1 horizontal clamp will lift plates up to ¾ inch htick, and has a capacity of 6 tons per pair, or being able to lift 400 square feet of plate with absolute safety. Weight per pair 10 pounds; corrugations on jaw. Size No. 2 horizontal clamp will lift plates from ¾ inch to 1½ inches thick, and has a capacity of 9 tons per pair, thus being able to lift 300 square feet of plate with absolute safety. Weight per pair 30 pounds. Size No. 3 horizontal clamp wil lift plates from 1½ inches to 2 inches thick, and has a capacity of 12 tons per pair, thus lifting 300 square feet with absolute safety. Weight per pair 72 pounds. The vertical plate clamps are made also of high-class open-hearth steel and are annealed. Size No. 1 vertical clamp will lift plates up to 1 inch thick and has a capacity of 4 tons. Weight per pair 44 pounds; corrugations on jaw. Size No. 2 vertical clamp will lift plates from 1 inch to 2 inches thick, and has a capacity of 9 tons. Weight per pair 84 pounds; corrugations on jaw. Invaluable to boiler makers, rolling mills, foundries, tank constructors, ship yards, or any plant where plates or metal sheets are handled. By their use costly accidents are avoided."

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The J-M Permanite Booklet, describing "Permanite" sheet packing, has just been issued by the H. W. Johns-Manville Company, Madison avenue and Forty-first street, New York. "No matter how severe the conditions, this packing makes absolutely tight points, because it is composed of pure asbestos fibers bonded with our special heat-resisting compounds."

A reducing valve, which is stated to maintain a constant reduced pressure even with great fluctuations in the initial pressure, is described in a circular published by Auld Company, 1253 North Twelfth street, Philadelphia, Pa. This is the "Quitetite" reducing valve. Being a single-seat valve it shuts off quite tight when no steam is being drawn from the reduced or outlet side. No sleeves or stuffing boxes to cause friction and irregular working of the valve; no inside springs. This valve is in use in every industry where reduced pressure steam, air, water or gas is required. "Please advise on the enclosed postcard if you desire a copy of our catalogue containing complete description of this valve. Should you happen to be in the market at this time write us, stating your requirements, and we shall be pleased to quote."

"Power Transmission Machinery" is the title of a cloth-bound catalogue of 270 pages just issued by the Jones & Laughlin Steel Company, Pittsburg, Pa. The introduction to this catalogue reads in part as follows: "We make our cold-rolled shafting, piston rods, pump rods, engine guides, etc., from homogeneous steel. Each process of the manufacture, from the mining of the ore to the finishing of the product, is conducted in works owned and controlled by ourselves, and under the personal supervision of a member of our firm, with a view of producing an article of as high grade, uniformity of structure and exactness of finish as it is possible to obtain, and at the same time of such softness and ductility as to admit of its being worked as easily and cheaply as iron, and with as little wear of tools. We were the pioneers in the art of cold-rolling, and have been engaged in it for more than forty years. During this long experience we have designed and built many special machines and tools for this work, and have organized and trained a corps of skilled men, such as can be found in no other works. These advantages enable us to make shafting, etc., of strictly uniform quality and accurately finished; better in all respects, we believe, than it is possible for other manufacturers, with limited facilities and less experience, to produce. We constantly carry a stock of about 3,000 tons of this cold-rolled material, and any orders that are entrusted to us shall be faithfully and promptly executed. We have also large foundries and machine shops, fully equipped with the best facilities for producing couplings, hangers, pulleys, fly-wheels and other means of transmission of power, and shall be pleased, at all times, to estimate on your requirements."

BUSINESS NOTES

AMERICA

HOLZAPFELS AMERICAN COMPOSITIONS COMPANY, 18 Broadway, New York, reports that Mr. Vanderbilt's yacht *Vagrant*, which is said to have made a remarkably fast passage from Bermuda to New York, was coated with the company's anti-fouling paints for the purpose of reducing surface friction to a minimum.

SPRAGUE ELECTRIC CLUB.—A large and representative gathering of the members of the commercial and manufacturing departments of the Sprague Electric Works of the General Electric Company, recently met at the Hotel Marlborough, New York, for dinner and organized the "Sprague Electric Club." It will be the purpose of the club to bring the salesmen, engineers, factory heads and other employees into closer personal contact and co-operation. The club adopted a constitution and by-laws and elected a board of governors and officers, and plans were tentatively formulated for a series of meetings and events which are destined to stimulate the interest of the members in the new association.

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No. 16 Style Marine Valve

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Mr. Steamship Owner:

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Satisfaction and comfort for navigating officers where AERO is.

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Safety for the passengers, security for the ship owners.

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In use and in stock at all ports of the world. Over 18,000,000 gross tons of shipping coated annually

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Protective and Lubricating Boxes

FOR PROPELLER SHAFTS

Are fitted to more than 3,000 Steamers,
with shafts ranging between 1⅞ in. and 20⅝ in. in diameter.

Our system insures maximum safety of propeller shafts, as these are running in oil, consequently no corrosion. . . . .
The costly liners on shafts may therefore be dispensed with as being absolutely superfluous. . . . . .

FRICTION MINIMISED
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Old Stern Tube Arrangements can be altered for application of this Lubricating Box at a very Nominal Cost. . .

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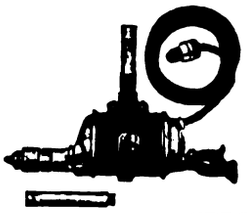
CINCINNATI ELECTRICAL



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In general use with Ship Builders everywhere. Take them to the work.

Made in twelve sizes, ¼ to 2½" capacities. Larger sizes fitted with screw-feeds.

SPECIAL FEATURES

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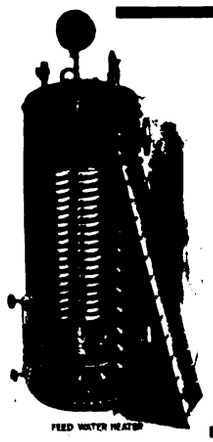
Catalog No. 6A illustrates fully

THE CINCINNATI ELECTRICAL TOOL CO., CINCINNATI, OHIO

R. R. Row and H. C. DAVIS have opened sales offices at 90 West street, New York, representing the Standard Water Systems Company, Hampton, N. J., manufacturers of the "Standard" multicoil feed-water heaters, evaporators, distillers and "Tripure" aerating stills. The above product and special work of all kinds will be sold by Messrs. Row and Davis throughout the United States.

WELLS LIGHTS ACQUIRED BY MILBURN COMPANY.—The business of the Wells Light Manufacturing Company, Jersey City, N. J., has been acquired by the Alexander Milburn Company, Baltimore, Md., manufacturer of high-power portable lights and oxy-acetylene welding apparatus. Repair parts for outstanding Wells lights will be manufactured and supplied in the future by the Alexander Milburn Company from its Baltimore factory, and complete Wells oil lights will also be furnished where desired in conjunction with the standard Milburn acetylene lights. The manufacture of Wells oil preheating burner outfits will be continued by the Milburn Company and sold in connection with Milburn oxy-acetylene apparatus. The Wells lights and Wells preheating devices have been on the market for about twenty years, and have occupied a leading place among oil-burning equipment of their kind.

FACTS ABOUT THE GRAPHITE LUBRICATING COMPANY.—This company's factory in Bound Brook, N. J., now occupies an entire city block, which contains two departments, consisting of what is known as the Bound Brook Department and the Nigrum Department. In the Bound Brook Department are manufactured the Bound Brook graphite and bronze oilless bearings, which have been well known throughout the country for more than twenty-five years. The Nigrum Department is new, in the sense that the product has been put on the market in the last two years after eight years of their careful experimenting and study. This has grown so rapidly that there is absolutely no room at the old plant to take care of its required production, therefore the Graphite Lubricating Company have bought a property that is two miles from the old plant, covering a plot of more than 500 feet by 200 feet, and is situated on the main boulevard to New York, on the tracks of the Central Railroad of New Jersey, Philadelphia & Reading Railroad, and the Baltimore & Ohio Railroad. A side track is available from all of these roads. This is to be known as Plant No. 2, and will be for the Nigrum graphite impregnated wood department only. The buildings on the new property at present consist of one building 30 feet by 130 feet, and another building 40 feet by 120 feet, with two stories, which gives ample store room. The first-mentioned building will be used for the machinery necessary to finish the bushings in their respective shapes and sizes, while the first floor of the second building will contain a very commodious office and what is known as their impregnating room, which will give ample capacity for all present requirements. The second floor of this building will consist of a stock room, where graphite impregnated wood of all sizes will be carried so that quick delivery can be made of all hurry-up orders. Bound Brook and Nigrum bushings are being very extensively used on automobiles for clutch bearings, brake cross rod bearings, spring bearings, pump bearings, steering post bearings, shock absorbers, self-starters, fan bushings and other places, as well as very extensively in the textile industry for saddles, skewers, loose pulleys, etc., and are in big demand for a great many uses in the machinery line. They will be glad to furnish you any information in their possession upon your request. They have a very handsome little booklet covering this proposition, which will be forwarded to anyone interested.



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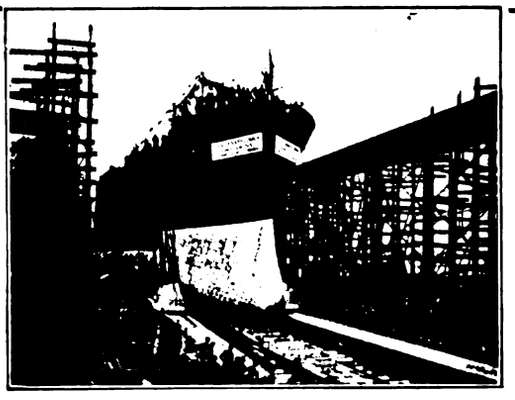
THE TENTH ANNUAL CONVENTION of the Federation of Trade Press Associations will be held in the Bellevue-Stratford Hotel, Philadelphia, Pa., on September 7, 8 and 9. Mr. B. J. Doyle, 512 Race street, Philadelphia, is chairman of the committee on arrangements. The Federation of Trade Press Associations, which comprises 250 leading trade and technical journals, representing over $40,000,000 invested capital, extends a cordial invitation to all manufacturers, sales managers, advertisers, executives, advertising managers, editors and publishers to attend the convention. Mr. Doyle will be very glad to write every inquirer full details regarding the Federation of Trade Press Associations, and explain why it deserves the co-operation and support of all business men and publishers.

SINCE REPORTING LAST MONTH the Brunswick Refrigerating Company has sold a number of refrigerating and ice-making plants for steamships. Among these are the steamship *Crickett*, of the Crickett Steamship Company, San Francisco. Cal. This boat was equipped with a ½-ton plant. The boat sailed from New York in less than a week from the time it arrived, and during this time the plant had been installed. Through the Newport News Shipbuilding Company, Newport News, Va., the Luckenbach Steamship Company has placed an order for two 1-ton plants for a ship now being built. The Munson Steamship Company, of New York, has ordered a 2-ton plant for their steamer now being built at the Maryland Steel Company, Sparrow's Point, Md. The Prince Line ordered a 1-ton plant, the ninth which they have ordered, for the steamer *Royal Prince*. The Clyde Steamship Company has ordered a 2-ton plant for the steamship *Apache*, and this has been installed. The Standard Oil Company of New York has placed orders for two 2-ton plants for oil tankers building at the New York Shipbuilding Company, Camden, N. J. Through the Great Lakes Engineering Company, Detroit, Mich., have come the orders for three (3) 1-ton plants for three (3) steamers for the Mallory Steamship Company of New York. The Brunswick Refrigerating Company is equipped to make shipment the day following the receipt of an order with information, so that they can proceed with the work. It is possible to deliver in New York City the morning following shipment from New Brunswick. Full details regarding the Brunswick apparatus and steamships which have been equipped will be gladly furnished by the Brunswick Refrigerating Company on application to their main office and works at New Brunswick, N. J., attention of Marine Department.

THE TERRY STEAM TURBINE COMPANY, Hartford, Conn., announces the appointment of Mr. Joseph Battles as district sales manager for Denver, covering the States of New Mexico, Colorado, Wyoming and the western portion of Nebraska. Mr. Battles' address is 326 First National Bank building, Denver, Col.

RECOGNITION OF THE TALBOT BOILER.—We have received the following statement regarding his conection with the Talbot Boiler Company, 120 Liberty street, New York, from Mr. Charles D. Mosher: "Upwards of thirty-five years of experience, particularly with high-speed vessels and their motive power, involving the designing and construction of the hull, engines, boilers, propellers, their auxiliary machinery, etc., together with several years of model experiments in tanks, the outcome of which has been the production of such high-speed vessels and yachts as the *Yankee Doodle*, brought out in 1887, with a speed of 29½ miles per hour, after which followed the steam yacht *Norwood*, with a speed of 30½ miles per hour, then the steam yacht *Presto*, with a speed of 32 miles per hour; the steam yacht *Ellide*, with a speed of 40.2 miles per hour, carrying steam at 400 pounds per square inch, running on Lake George for the past sixteen years under that pressure, and finally the steam yacht *Arrow*, with a speed of 45 miles per hour, the *Arrow* carrying steam at 440 pounds per square inch. The gradual development from the simple high-pressure engine to the quadruple expansion, and finally the uniflow engine and the turbine, together with the development of boilers from the old type, or shell boiler, and the watertube, involving many arrangements of coils, and finally the well-known Mosher watertube boiler, which has been adopted by the United States and foreign Governments in many of their battleships, monitors, destroyers, torpedo boats, etc., as well as many large commercial vessels. With all the lines of progress where the transfer of heat has been involved, experience has led to the adoption of the contraflow system for increasing the efficiency, whether in condensers, evaporators, distillers, feed heaters, and many other applications for the transfer of heat. But the contraflow boiler has remained the last to be seriously considered, and it may be truthfully stated that there has been no marked progress in the principles involved in boiler construction in the past generation. Such improvements as have taken place have been confined to details of construction and arrangement of parts, but the principles involved of carrying large volumes of water with circulation by gravity

For Better Lubrication of Reciprocating Engines use LUBROLEINE MARINE ENGINE and CYLINDER OILS



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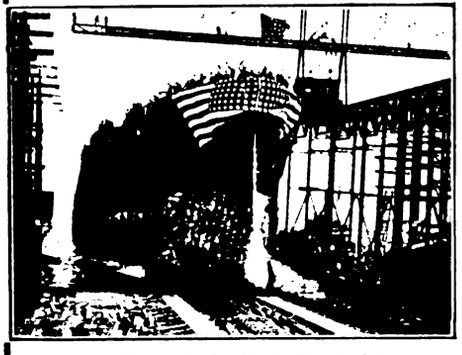
For Forced Feed and Turbines use LUBROLEINE F.L.ENGINE AND LUBROLEINE TURBINE A OILS



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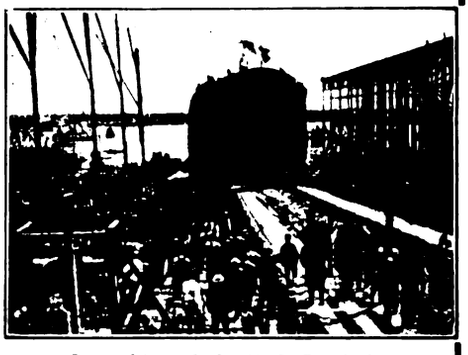
Used by the prominent shipbuilders throughout the world.

Send for above photos and further particulars.



Launching of the U. S. Battleship "Wyoming"

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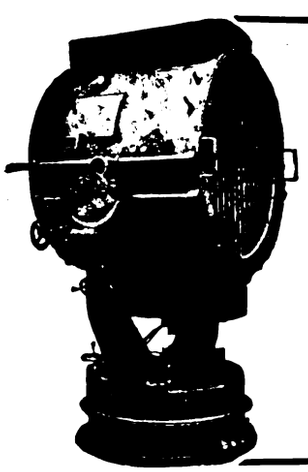
Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

Wanted, to represent manufacturer in New York territory, by man well acquainted with the pump and power plant field. Several years successfully represnted a prominent firm. Address *A*, Room 322-E, 30 Church street, New York City.

has remained the same in all of them, and has not kept up with the march of progress, therefore, the contraflow type of steam boiler, with the water spread in a thin film over the surface, represents the last word in the science of boiler construction. The arrangement of tubes which spreads the water in a thin layer (less than ⅛ inch thick) over the fired surfaces of the boiler, causing the water to hug these surfaces so that every bubble of steam formed is immediately swept away by a forced circulation, thus increasing the heat-absorbing capacity so that not more than one-half to one-third of the heating surface is required. The last tubes which the steam passes through are arranged to act as a thermostat, one end of which is directly connected to the valve controlling the supply of feed water, and also directly connected to the oil valve for supplying fuel for the oil burners, thereby producing the most positive control of the temperatures, pressures and capacity of the boiler by the actual temperatures of the steam on its way to the engine. The factors having been thoroughly secured by letters patent of the United States and foreign countries by the Talbot Boiler Company, have led the writer to decide (after two years of investigation since the Mosher Boiler Company went out of business) that he must become associated with the Talbot boiler in order to successfully continue in the boiler business, otherwise the positive certainty of being left in the rear ranks of boiler construction by following the old type of boilers depending on gravity circulation, so that without being associated with these improvements as above described the meeting of all requirements, including maximum efficiency on aminimum of weight and space, would be an absolute impossibility. This decision has been reached after the most thorough research in all parts of the world, involving every known type of steam boiler, their records for thermal efficiency, steaming capacity per unit of weight and heating surface. Added to the above the Talbot boiler has shown by actual test the hitherto unheard-of thermal efficiency of 89 percent; that is, 89 percent of the heat in the fuel has been actually converted into steam as delivered for use at the engine, which is greater than that of any other known type of steam generator, as shown by authentic tests in any part of the world. This extraordinarily high efficiency is partially explained by the fact that the waste heat going up the stack in the Talbot boiler is 600 to 700 degrees cooler than in other boilers, as the usual conditions of operation are reversed; that is, the feed water is supplied at the stack end of the boiler, and the steam is taken out at the furnace end, with the result that the heat going up the stack is last in contact with the incoming feed water, so that the waste heat is not over 100 degrees hotter than the water or air surrounding it, whereas in the old type of boiler the waste heat is 300 to 400 degrees hotter than the steam in the boiler that it last passes over, which at, say, 300 pounds pressure, is 422 degrees, make, say, 800 degrees going to waste up the stack, as against less than 200 degrees above the atmosphere in the Talbot boiler, or a net saving of over 21 percent, which goes directly into the steam instead of up the stack as in other boilers. A leaky tube joint is unknown in these boilers, and there are no joints in the fire, only one end of the tubes are attached to the headers, so they are free to expand; thus only one-half of the tube joints are required. Any tube may be replaced within ten minutes without waiting for cooling off. Access to only the front end of the boiler is necessary, and no special tools are required, only an ordinary monkey-wrench. A disastrous explosion is an absolute impossibility; besides, their adaptation for supplying superheated steam in excess of 800 degrees, which is under absolute control at all times. The high velocity of circulation keeps the interior of the tube scoured bright and clean, so that they absorb the heat to the best advantage, and a most efficient system for blowing soot from the tubes. Thus every little detail has efficiently been cared for, which many years of experience has suggested."



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Made in any size and any candle power from the small yacht lamp, to the largest navy standard type.

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5 Adelphi Terrace, London, W. C.

INSTITUTION OF ENGINEERS AND SHIPBUILDERS IN SCOTLAND
39 Elmbank Crescent, Glasgow.

NORTHEAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS
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BILLY SUNDAY

says he has the "Devil on the run," but—that's Billy's business—not ours.

Our business is making [and selling] the Highest Class Mechanical Rubber Goods that over 25 years of "know how" can produce from A–1 materials.

"EASY TO SAY"—OF COURSE—

but this is "backed" by the thousands—yes, Tens of Thousands, of satisfied users, all over the world, of **PEERLESS** goods.

RAINBOW PACKING

Note the Trade Mark and remember—RAINBOW is always RED—but that all red sheet packing is NOT—RAINBOW

It is imitated but never equalled

For instance, take RAINBOW sheet packing, the most widely known and "sworn by" packing used today for any kind of Air, Steam, Hot or Cold Water joint.

It will NOT harden, crack nor "blow out" and is equally adaptable for High or Low Pressure joints.

Why not try RAINBOW? Sample and prices cheerfully given, or, we'll tell you the nearest jobber who sells our goods.

PEERLESS RUBBER MFG. COMPANY

31 WARREN STREET

NEW YORK

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TRADE PUBLICATIONS.

The G-E portable control gear, which is stated to greatly increase stevedoring profits, is described in a bulletin published by the General Electric Company, Schenectady, N. Y. By the use of this control gear maximum dispatch is claimed, reducing cost and resulting in greater safety and lessened damages following the use of winches equipped with G-E motors and portable controller, the latter hung from the operator's shoulders. The operator moves about following the draft and controlling winches with a muff-like controller—with electricity he does all the work usually done by two winch men, one or two signal men and two steam engines.

"Sphinx" direct process black print paper is described by F. Weber & Company, 1125 Chestnut street, Philadelphia, Pa., in a circular the company has just issued. This circular reads in part as follows: "'Sphinx' direct process black line paper is, to the best of our knowledge, the only printing paper of its kind made in America. It should not be confused with the black line papers heretofore offered. The 'Sphinx' is prepared after an entirely different formula. It will give, if handled according to directions, positively black lines on a pure white background. The exposure, whether to the sun or under the arc, is quick. Not so quick as the fastest blue print papers, but about the speed of ordinary brown print paper. This alone is a great advantage, since the foreign brands all require exposures ranging from 20 minutes to half an hour, dependant upon conditions. The stock (paper) is the best and strongest procurable. It will withstand a great deal of handling, and for filing or recording purposes should last indefinitely. For the time being we propose to make 'Sphinx' direct process black line paper in three weights only—thin, medium and extra heavy. The thin is light and strong enough to be used as a tracing (on which corrections could be made with India ink), and from which blue prints can be made. In closing, we might remark that the prices are right, our object being to have black line paper eventually displace brown print negatives and blue line prints. From an ordinary tracing 'Sphinx' direct process black line paper will give a black line print or positive. A positive fro ma positive. To parties interested a printed sample will be forwarded and prices quoted on request."

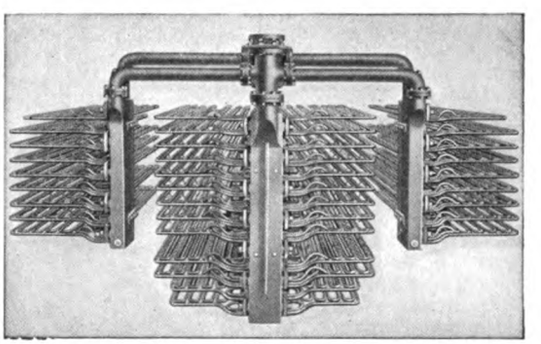
"Fiberclad" wire rope is the subject of a booklet issued by Waterbury Company, 63 Park Row, New York. "Waterbury Fiberclad wire rope is a wire rope each strand of which is served with the best grade of tarred Russian hemp marline. This fiber covering prevents the chafing and wear of the wire strands during flexing movements and after being in service a short time this fiber covering packs into the interstices of the strands, resulting in a rope having a smooth cylindrical surface. The tarred marline covering also protects the wire strands of the rope from moisture or water, eliminating the possibility of rust and also preventing foreign matter, such as coal or cement, dust, gases and fumes, etc., from working through to the wire strands. Unlike manila rope, Fiberclad is unaffected by changes in atmospheric conditions; it will not stretch in dry weather nor contract in wet weather. Manila rope will swell and jam in the blocks. Waterbury Fiberclad rope will not swell or jam nor ice up in freezing weather."

The Hebble chock-gear for releasably supporting boats and releasing gripes is described by C. J. Hale, 17 Battery Place, New York, in a circular which Mr. Hale has just published. In this circular the following statements are made: "Recent changes in the rules of the Steamboat Inspection Service, and the Seamen's Act, have made necessary a rearrangement of lifeboat gear to meet the new requirements. Mr. A. S. Hebble, superintending engineer of the Atlantic Steamship Lines (Southern Pacific Company), designed the device described herein primarily for use in connection with a type of davit known as the Mallory Davit, of which his company has over forty. The Hebble Chock Gear makes the Mallory Davit a one-man davit, complying with the new requirements, and at the same time eliminates 75 per cent of the labor previously necessary to operate it. Formerly when launching a boat under a Mallory Davit it took three or four men at each end to lift it out of the chocks. This is now unnecessary. The Hebble chock gear may be applied to your old chocks with comparatively no alterations. By pulling out the safety pins and raising the lever at each chock the boat and gripes are released simultaneously. The Hebble chock gear saves time and labor. It is positive, simple and will not get out of order. It is reversible, and may be placed on either side of the chock. It is light and inexpensive. It is absolutely necessary with all types of davits. It has been approved and recommended by the Local Steamboat Inspection Service."

FIRE TUBE MARINE SUPERHEATER

EIGHT REASONS WHY:

1. It is adaptable to either new or existing boilers of the fire tube type and can be applied with no change in design or construction.
2. It renders possible increase in output of boiler horse power from a given boiler plant, 10% to 20%.
3. It will produce the same power output with fewer boilers.
4. It reduces the size of the bunkers, thereby reducing the draft of the vessel with a given cargo or making possible an increase in revenue cargo.



5. It results in a saving of fuel over saturated plants, both operating under the same draft conditions, of 10% to 20%.
6. It reduces the maintenance costs by the prevention of water hammer, leaky flanges and condensation in the cylinders.
7. It does not prevent rapid, thorough and frequent cleaning of the tubes.
8. Its construction provides easy access to all screwed joints and the easy removal of the parts.

LOCOMOTIVE SUPERHEATER CO.

30 Church St., New York, N.Y. **People's Gas Bldg., Chicago, Ill.**

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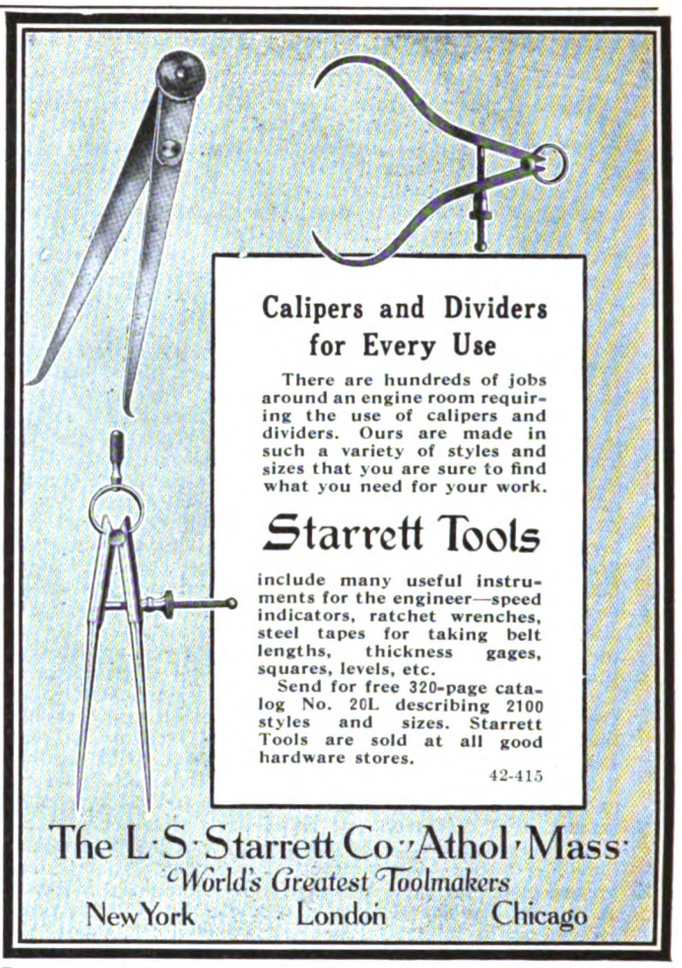
New I. O. C. System Booklet.—The International Oxygen Company has issued from its general sales office, 115 Broadway, New York City, an interesting 24-page booklet with the title, "I. O. C. System Production, Pure Oxygen and Hydrogen." The booklet is profusely illustrated, showing I. O. C. System installations as made in various parts of this country and abroad. It dwells chiefly on the economy of the production of oxygen for cutting and welding by the I. O. C. System in one's own plant, in foundries, railroad shops and industrial establishments.

"Aids in Navigation" is the title of an illustrated booklet which has just been published by the Cummings Ship Instrument Works, 110 High street, Boston, Mass. "Is your ship still run by means of the same instruments used fifty years ago? Whenever you are running through a fog, or want to cover a certain distance on a given course, and find that the use of dead reckoning gives you only approximate results—that's when you wish you had an instrument which would tell you just how far you had gone and how fast you were doing it. Your propeller is a most reliable indicator of your distance, because its slip is practically constant for the speeds at which you normally run, as well as for other speeds, such as those used in a fog, etc. Whether you have a single screw or two or more screws, the result is always the same—you can depend upon the propeller to give you a close knowledge of just what the ship is doing, provided you have the proper instruments through which to get that knowledge. The Cummings engine log system is the last word in the development of ship instruments. Installed or being installed on twenty ships, the system has been found invaluable, especially when navigating in a fog. You get automatically and continuously, in the pilot house, full knowledge of what your propellers are doing—their speed, direction of rotation (useful in docking), distance run on any course, speed of ship, etc. You don't have to ask your engineer to tell you this. He needn't keep one eye on the clock and the other on the counter—then figure it all out and send you the result. You get it all without his help, and you get it accurately and instantly."

Seabury watertube boilers for marine and stationary service are described in illustrated Catalogue 10-A, just published by the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., Morris Heights, New York. "The Seabury safety watertube boiler is designed to meet the requirements of a lightweight boiler, occupying a minimum of floor space per horsepower, besides possessing, to the highest degree, all the essential qualities and attributes of safety. Its simplicity of construction must appeal to all fair-minded engineers, especially as this simplicity tends to materially increase efficiency and durability. All the pressure elements throughout the Seabury safety watertube boler, whether of the stationary or marine type, are kept as small as is consistent with good designing, thus making it an exceptionally safe steam generator. By comparing the steam drum of a Seabury boiler—its largest pressure element—with the large drums, many feet in diameter, in the shell and Scotch types of boilers, the claim of greater safety is at once apparent. A large number of Seabury boilers are to be found in both stationary and marine service. Boilers intended for stationary and commercial marine work, where weight is not an essential factor, are of heavy construction, with large steam drums and generating tubes. Steam domes are also added when required. High-speed yacht boilers are constructed with small drums and generating tubes, so as to economize in weight. Standard Seabury boilers are designed with a single steam drum connected to two lower or mud drums—one on each side—by two nests of bent tubes enclosing a large combustion chamber. The tubes are staggered so as to present the greatest amount of direct heating surface, and are also so arranged as to facilitate their cleaning by means of a steam jet and hose. When given ordinary care renewal of tubes will not be necessary for many years, and then, when found necessary, a tube can be replaced in a very short time. The two nests of tubes to the right and left of the combustion chamber, with their baffling walls, together with the feed-water heater—when supplied—running crosswise over each nest of tubes, interpose an efficient heating surface from which the maximum amount of heat is extracted. We will furnish test data where required, from our records, of such tests as conform to the character of service which the contemplated boilers are to perform. It will readily be appreciated that the conditions of operation would greatly affect the result, so that we have adopted the policy of furnishing, upon request, test data from boilers performing service similar to that intended. Seabury watertube boilers are built to any size from 3 to 3,000 horsepower, and either single or double-ended. They are of the most flexible design, and can be constructed to fit the space available with the least amount of waste room."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There are hundreds of jobs around an engine room requiring the use of calipers and dividers. Ours are made in such a variety of styles and sizes that you are sure to find what you need for your work.
Starrett Tools
include many useful instruments for the engineer—speed indicators, ratchet wrenches, steel tapes for taking belt lengths, thickness gages, squares, levels, etc.
Send for free 320-page catalog No. 20L describing 2100 styles and sizes. Starrett Tools are sold at all good hardware stores.
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World's Greatest Toolmakers
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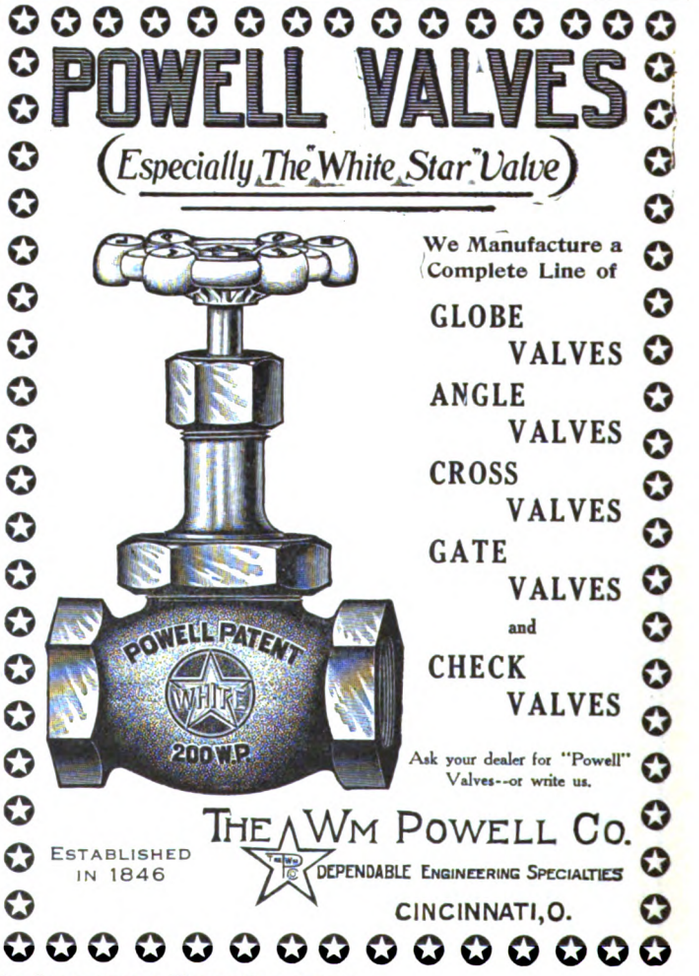

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Why not

profit by the experience of others in the treatment of boiler scale and use

DIXON'S BOILER GRAPHITE?

It will save you much of the expense and inconvenience of boiler cleaning. Booklet No. 75-T, sent upon request, tells how.

Made in Jersey City, N. J., by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

T-23

Port Orford cedar, which after many severe tests has been adopted by the United States Government for pontoon and boat lumber, is described by the C. A. Smith Lumber Company, Oakland, Cal., in a circular the company has issued. The circular states that Port Orford cedar is also used for boat building by yacht and ship builders all over the world.

"J-M Sea Rings" is the title of a bulletin published by the H. W. Johns-Manville Company, Forty-first street and Madison avenue, New York. The bulletin states that the J-M Sea Rings are just as automatic as the Corliss valve gear, and grip the rod only when the steam pressure makes them. They are intended for steam, air and water service.

Direct-connected dynamos and engines, using direct current, 1 to 75 kilowatts, are stated by the Engberg's Electric & Mechanical Works, 16 Vine street, St. Joseph, Mich., to be especially useful on board ship, in a catalogue the company has just issued. These dynamos and engines are said to have a record of long and continuous service under the most exacting conditions without the slightest signs of imperfection.

"The Visitor" is the title of a monthly pamphlet published by the Southern Bedding Company, Baltimore, Md., manufacturer of "Romelink" metal berths, folding or stationary. "Romelink metal berths represent the highest types of modern berth equipment. Romelink insures durability, comfort and cleanliness in the smallest space."

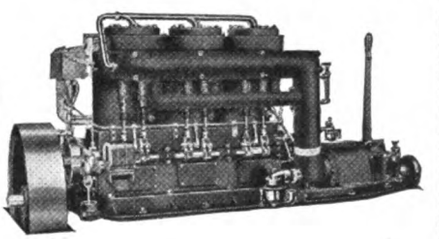
Chemical fire apparatus of all kinds is described in an illustrated booklet of 20 pages published by O. J. Childs Company, Utica, N. Y. "Every form of fire extinguisher or engine is an emergency device pure and simple, and should be so considered. It must remain undisturbed for a period of months or years, and suffer no deterioration whatever from the powerful chemicals contained, and at the same time retain the power to act instantly and effectively when called upon to do so. This means that the best material, together with intelligent care and supervision in manufacture, as well as adequate facilities, is absolutely necessary for the production of good, dependable apparatus. We have devoted every energy and all our time to this one problem for a period of eighteen years."

De Laval high-speed blowers and compressors are described in Catalogue D-46, issued by the De Laval Steam Turbine Company, Trenton, N. J. This circular reads in part as follows: "The steam turbine has brought with it certain new types of rotative machinery, such as centrifugal compressors, and is leading to refinements in the design of many other types of machinery, such as low pressure blowers, speed reducing gears, etc. The commercial low pressure blower or fan has heretofore resisted most attempts to improve its design to conform to aero-dynamical knowledge. Among the obvious faults of the common paddle-wheel fan or blower it may be mentioned that the air is received by the impeller blades with considerable shock, and in flowing through the wheel is required to make abrupt turns with sudden changes in cross section of flow. The supports for the floats or vanes obstruct the flow of the air, and the amount of surface in contact with the air moving at high velocities is unnecessarily large, resulting in great loss by skin friction. Due to disregard of the laws of fluid flow, the efficiency is low and the action noisy, and as ordinarily built the fan is bulky, due to the slow speeds required because of structural weakness of large, flat surfaces, inferior materials, indifferent methods of construction, lack of balance, etc. The so-called multi-blade fans, which to some extent have replaced the paddle-wheel fan, are equally as bad as regards lack of scientific design, run at still slower speeds for the same pressures and volumes, are inherently weak structurally, and offer as their only recommendation a small economy in space. Neither type of fan is suited for direct connection to the modern high-speed rotative prime movers, such as the steam turbine and the electric motor. While the proper design of such machines offers some aero-dynamic difficulties, the principal obstacles to be overcome in adapting them to high-speed service are those relating to materials and shop practice, and this also constitutes the problem of high-speed machinery in general. The De Laval Steam Turbine Company was a pioneer in the development and practical application of high rotative speeds, and by employing the same high-grade materials and workmanship used in its turbines, has found it possible to run centrifugal blower and compressor wheels safely and satisfactorily at peripheral velocities of 450 to 600 feet per second, rendering practicable the generation of 3 or 4 pounds per square inch in a single-stage blower, and the connection of the blower or compressor directly to the turbine in nearly all cases."

WOLVERINE for MARINE SERVICE

THE MOTOR WITH THE BORE and STROKE

FUELS { KEROSENE (PARAFFIN)
GASOLINE (PETROL)
DISTILLATE
SUCTION PRODUCER GAS



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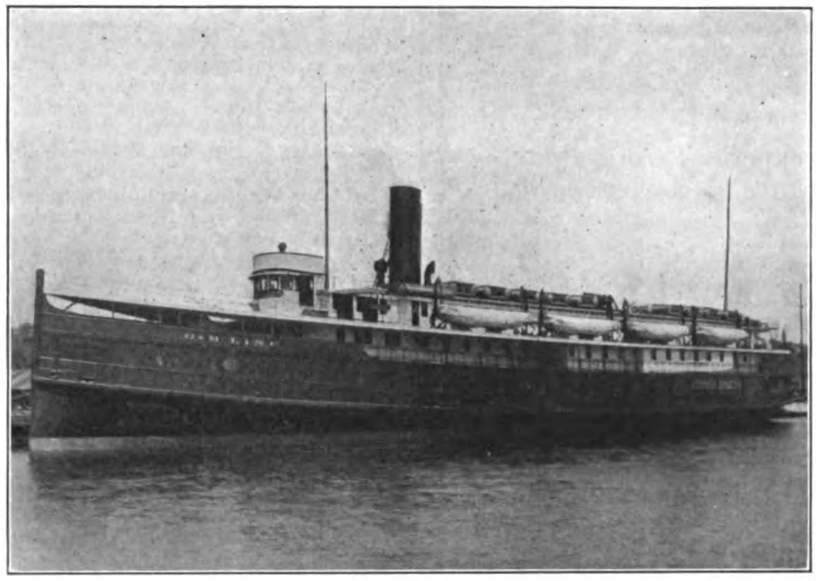
WELIN MARINE EQUIPMENT CO.

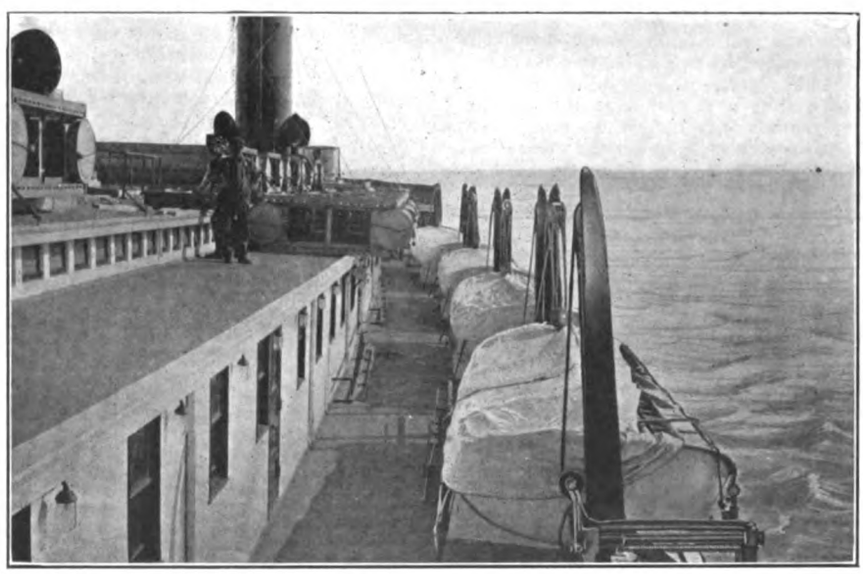
305 Vernon Avenue, Long Island City, N. Y.



S. S. "CITY OF ST. JOSEPH" OF THE GRAHAM & MORTON TRANSPORTATION COMPANY

Supplied throughout with Lundin decked lifeboats under Welin quadrant davits. Also with our pontoon life rafts and A B C life preservers.

All this equipment will meet the latest U. S. Steamboat Inspection Requirements, and the laws adopted by the International Conference for safety at Sea held at London.



London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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The Davidson hydraulic ash ejector is described in a catalogue published by M. T. Davidson Company, 154 Nassau street, New York. For this ejector, which is used on many ships of the United States navy, a number of advantages are claimed, among these being that it will not flood the fire-room and that the overboard pipe cannot clog, because the ashes must pass through an opening smaller than the size of the pipe.

The Foster fuel oil stop and check valve, made by the Foster Engineering Company, Newark, N. J., is described in a circular the company has just published. "An automatic device, designed to check and prevent the flow of oil in the event of a blow-out, fracture or any accidents arising in the main or auxiliary oil supply lines. The rapidly-approaching general use of oil as a fuel and as an economical substitute for coal or wood, etc., both on land and on sea, particularly the latter, where experiments and repeated tests in our own and foreign navies, and among the larger corporate owners of trans-Atlantic and Pacific and the Great Lakes lines, has demonstrated the immense and as yet unborn possibilities of oil as the coming fuel. And with its use is presented the necessity of arriving at the proper, and at the same time practical, means of safeguarding against every possible contingency that may be met with. Every view and every argument that can be advanced in the favor of oil as a fuel (and its advantages are legion), must necessarily carry with it the predominant feature —what can be done to safeguard its use from every standpoint? The Foster automatic fuel oil stop and check valve is the answer. It insures against explosions or ignition due to the oil, in the event of a fracture in the supply lines, finding its way to flame or fire; it automatically and instantaneously checks the flow of oil should any contingency arise in the pipe lines beyond its point of installation; it cuts out automatically, but it will remain closed until manually operated, and again thrown into commission to permit the flow of oil; it cannot be wedged or locked open; it will function and restrict the flow of the fluid should, through carelessness on the part of the furnace operator, result in an excessive consumption of oil or abnormal flow beyond the maximum; it guarantees against an overfeed to the burners; it prevents undue waste; at a recent test on a 1-inch pipe line, under varying pressure from 100 to 250 pounds, upon cutting out, the Foster valve closed with a loss of oil of less than one-half pint."

Purchasing agents, foremen and superintendents will be interested in a large and profusely illustrated catalogue, No. 20-L, which has been published by the L. S. Starrett Company, Athol, Mass. The Starrett Company makes a specialty of fine measuring tools for general shop and tool room use. Some of these include big calipers, big micrometers of various types, Vernier calipers, many kinds of gages, steel tapes, etc. Catalogue No. 20-L shows 2,100 styles and sizes of fine tools. A copy will be sent free to any of our readers upon request.

"Actual Pipe Threading Experiences" is the title of a booklet which has just been published by the Oster Manufacturing Company, 2117 East Sixty-first street, Cleveland, Ohio. In this catalogue is illustrated a combination pipe, bolt and nipple-threading machine for use in ship yards. It is stated that the use of this machine three days a week pays 35 percent on the investment over ordinary pipe threading methods, making it a profitable outlay for both large and small yards. It is furnished in four sizes for either belt or motive drive. For use on board ship the Oster No. 206 geared machine is a strictly one-man tool, making it possible for one man to thread all sizes of pipe from 1 to 6 inches without special effort. The wide range, the two speeds on one crank, and the automatic cutting-off attachment are all features which, it is stated, make it particularly fast and convenient for marine use.

A marine type of refrigerating machine is described in an illustrated catalogue which has just been printed by the Clothel Company, 90 West street, New York. Regarding the company's 3-ton marine machine the catalogue makes the following statement: "On account of the exceedingly small space available for refrigerating machinery on small pleasure yachts we have spent a great deal of time in developing a machine with the idea of using as little floor space as possible. Our efforts have been rewarded by the design of our 'M' type machine. This machine consists of a rotary compressor driven through a flexible coupling and outboard bearing by a Morse silent chain from a variable speed electric motor. The brine and water pumps are driven by gears from a driving gear placed on the main drive shaft. These three gears run in a cast iron oil-tight housing, which precludes any possibility of noise. The chain is incased in an oil-tight sheet metal chain guard. All of this apparatus is mounted on a cast iron bedplate, and all the necessary auxiliary connections are furnished, including suction strainer and lubricant sight feed."

PACKINGS FOR THE MOST SEVERE CONDITIONS

FIRO SUPERHEAT STEAM PACKING

CANNOT BLOW IT OUT

CANNOT BURN IT OUT

STYLE 1846

TURXO GLOBE AND ANGLE VALVE PACKING

TWISTED STYLE—251 BRAIDED STYLE—252

As a Valve Stem Packing, it is a Peer in its Class

NEW YORK BELTING AND PACKING CO.

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The Yacht SOUTHWARK

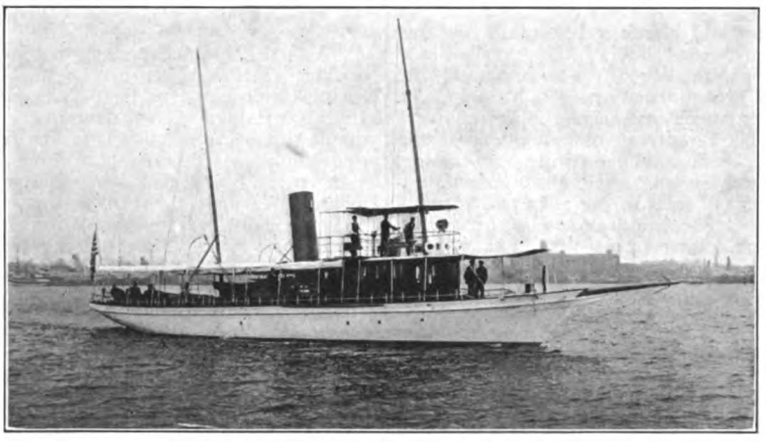
Length, 98 ft.
Beam, 16 ft.
Draft, 7 ft.

Speed, 12 Miles per hour.

Fuel Cost, 18¾ cents per hour.

Cost for One Filling of Fuel Tanks, at 2½ cts. per Gallon, $35.

Cruising Radius, One Filling of Fuel Tanks, 2,200 Miles.



Owner:
C. P.
VAUCLAIN.

Fuel Used, 7½ Gallons per hour.

Capacity of Fuel Tanks, 1400 Gallons.

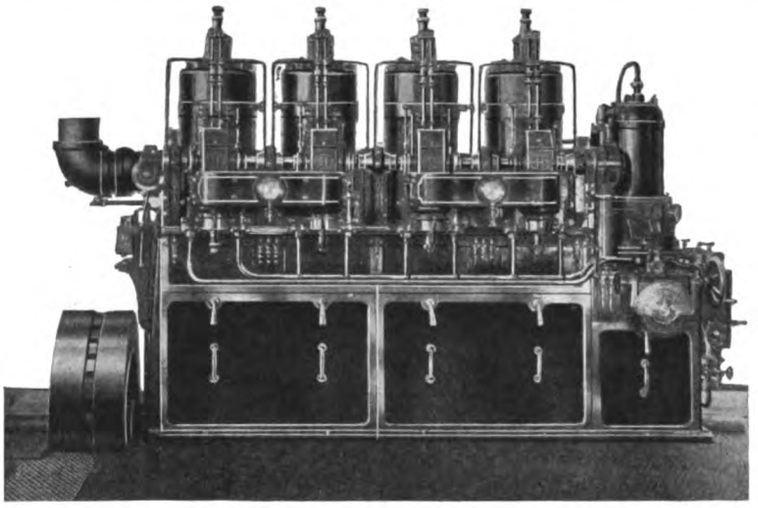
The SOUTHWARK'S Engine

B. H. P. 150.

Number of Cylinders, 4.

Diameter of Cylinders, 9 in.

Revolutions per Minute, 300.



Air Starting.
Crude or Fuel Oil.
Two Cycle.

Directly Reversible from Full Ahead to Full Astern in Five Seconds.

The Southwark-Harris Valveless Engine, Diesel Principle

FROM STONE COLD TO FULL POWER IN 10 SECONDS

For Use in Submarines, the Southwark-Harris Valveless Engine possesses many features which strongly recommend its use. Builders of submarines should investigate this engine before deciding upon the motive power for their boats.

SOUTHWARK FOUNDRY AND MACHINE COMPANY

428 Washington Ave., Philadelphia, Pa.

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PORT ORFORD CEDAR

BEST FOR BOATS

The true species grows in and about Coos Bay, Oregon, and to insure getting it—

Watch for this TRADE

Watch for this MARK

WE IDENTIFY OUR CEDAR

For information, prices, etc., write the manufacturers

C.A. SMITH LUMBER COMPANY

OAKLAND, CALIFORNIA

ALSO LARGE MANUFACTURERS OF DOUGLAS FIR

ANCHORS

We manufacture Trotman, Old Style, Rogers, Mushroom and Stockless Anchors.

1,000,000 lbs. constantly carried in stock. Can turn out 100,000 lbs. per day. Used extensively in the U. S. Navy.

CHAIN

We also carry in stock about 2,500,000 lbs. of second-hand studlink chain 1½" to 2¾". This chain will meet Lloyd's requirements if desired.

Baldt Anchor Co., Chester, Pa.

Ray D. Lillibridge, technical advertising specialist, 111 Broadway, New York, has issued a neat pamphlet, which is reprinted from the *Electrical Review,* and which tells in concise form Mr. Lillibridge's qualifications and the reasons which have made him one of the leaders in his chosen field.

"Ulcoloy," a copper-lead metal for bearings, bushings, metallic packings, etc., is described in a booklet just published by the United Lead Company, 111 Broadway, New York. "As a metallic packing 'Ulcoloy' is the metal par excellence, with a freezing point of 900 degrees F. It is suitable for superheated steam, and its anti-friction properties and low cost make it valuable for all forms of metallic packing. 'Ulcoloy' is sold in any form desired, guaranteed free from bow-holes, lead segregation or any other defects. 'Ulcoloy' is suitable for piston rings, bull rings, etc. Samples for testing will be submitted upon application."

Electrical equipment for freight-handling machinery is described in bulletins published by the General Electric Company, Schenectady, N. Y. "The General Electric Company is ready to help dock boards and city engineers increase the prestige of their ports by equipping any mechanical freight-handling machinery they may select with electric motors and control equipment, or to furnish the lamps for lighting the piers and bulkheads. Many stevedoring firms, steamship companies and dock boards are greatly increasing despatch and economy, while materially reducing accidents in their freight handling by the use of G-E equipment. Reductions in leakers result from the careful handling made easy by G-E control of movements. The greater cleanliness and despatch obtains and holds for stevedoring firms the handling of packing house products and other profitable business. Our engineers and salesmen have been following the electrical equipment of mechanical freight-handling devices for years, and can show remarkable results accomplished by equipment in use as well as many repeat orders resulting therefrom. We invite your investigation."

The "Tee-Dee" all-steel factory truck, which is stated to be very useful on steamship docks and piers, is described in a circular issued by the Tucker & Dorsey Manufacturing Company, Indianapolis, Ind. "The Tee-Dee all-steel factory truck is as superior to the common wooden truck as the steel Pullman to the antiquated wooden railway coach, with the added distinction that it is as light on its wheels as the wooden kind and less noisy. Stronger and more durable, the slight difference in cost is easily saved in a few months' service. The resiliency in the steel body protects the castings and wheels from sudden blows and renders the truck practically immune to breakage, while the smooth steel platform avoids the rough and splintered boards of the wooden truck and calls for no repairs. The castings and wheels are strong patterns, well balanced—large wheels on a turned axle with roller bearings and improved swivels, either plain or ball-bearing. The platform, sides and ends are reinforced and thoroughly braced. The stakes are removable, and either 1⅝ by 2½-inch oak or 1½-inch extra heavy steel pipe. The Tee-Dee steel truck is neat, clean, sanitary and fireproof. It is the last word in trucks. Orders are solicited with the certainty of giving satisfaction. Order a sample truck at once and write for discount and terms."

"Dry Steam" is the title of a catalogue devoted to the Tracy steam purifier and published by the Tracy Engineering Company, San Francisco, Cal. "As old as is the art of making steam, and as long as the so-called dry pipe for preventing moisture from leaving the boiler with the steam has been used, no substantial improvement has been made. Owing, however, to the now recognized deficiency of this device, much effort has been directed toward an improvement, with a result that various substitutes have been brought out from time to time; but from a careful study of the problem, covering a wide range of investigation and experience, we feel warranted in saying that the question of efficient separation had never been solved before the scientific principles embodied in the Tracy steam purifier were introduced. The results obtained from the many that are now in daily use have made what may be justly called a new era in the science of separation, so that the 'commercially' dry steam having 1, 2 or 3 percent of moisture is no longer a standard, as we are now prepared, by making the purifier to fit each particular case, as outlined by the purchaser, to actually take out all of the water, together with the added advantage of eliminating all foreign matter that may be entrained or carried over by the steam. The purpose here is to bring the results of our research to the attention of owners of boilers who are desirous of overcoming the difficulties incident to wet steam, and to that end we courteously invite a review of the following pages, which are devoted to a description of how it is done."

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Coils are described by the Roessing-Ernst Company, Etna, Pittsburg, Pa., in a circular the company has just issued. "We have just completed a large order for large coils: Nine 5-inch oval or trombone and cylindrical coils, made of 5-inch seamless drawn tubing. They are to be used in tar tanks in by-product coke plants. There were seven trombone coils, each containing 180 lineal feet, and two cylindrical coils, each containing 108 lineal feet. The ends of the tubing were welded together so that each coil was one continuous length, from inlet to outlet."

"Boiler Management and Inspection" is the title of an article published in the April issue of *Graphite*, issued monthly by the Joseph Dixon Crucible Company, Jersey City, N. J. This is the fifth article of a series concerning boiler room practice written by Joseph G. Branch, editor and publisher of *Electricity and Engineering*. The use of boiler graphite is the subject of this particular article. Any of our readers who wish to obtain all of the articles published in *Graphite*, on the subject of boiler management and inspection, may do so by writing to the Joseph Dixon Crucible Company, and mentioning INTERNATIONAL MARINE ENGINEERING.

The Druckleib injector sand blast apparatus is described in a circular just issued by J. M. Betton, 26 Park Place, New York. In the circular the following statement is made in reference to this sand blast apparatus: "The Drucklieb injector sand blast apparatus is the only application of the injector principle, as commonly applied to steam injectors, to the sand blast, the highest possible velocity necessary being imparted to the mixture of compressed air and sand by the several air jets, by means of which the quantity of the air can be controlled and directed, an essential feature to be found only in this apparatus. With it castings can be cleaned, scale and rust removed from steel structural work, dirt and weather stains from the stone and brick work of buildings, and other similar work performed, with the minimum amount of air, sand and pressure."

In Re Literature About "National" Pipe.—The National Tube Company, Pittsburg, Pa., writes INTERNATIONAL MARINE ENGINEERING that the development of the pipe business has been so rapid that reliable literature on the subject has been quite scarce. 'National' bulletins represent our endeavor to produce and develop such educational literature for which there is an evident need. Twenty bulletins have already been issued on various phases of the pipe industry (for titles see 'National' Bulletin No. 20, pages 31-32). This bulletin represents an index in considerable detail, the idea being to offer pipe information readily accessible to the busy man—whether editor, contractor, dealer or consumer. We shall be glad to have your readers send for a copy of this bulletin, and would ask that they make such comment or criticism as may occur to them, whereby the end in view may be more readily attained, viz.: to make available for the busy man the information about pipe which is stored in previous 'National' bulletins."

Knox tractors on steamship docks and piers. This is one of the many uses to which Knox tractors may be put, and they are described in a handsomely illustrated catalogue just issued by Knox Motors Company, Springfield, Mass. "Twelve good reasons for purchasing Knox tractors" are given in this catalogue as follows: "Bulk of load rolls on steel tires—manifest economy; spread of weight over three axles—easier on roads, bridges and tires; power ahead of load—pulling is easier than pushing; turns around easily in narrow roads and yards; several wagons may be used—one loading, one moving and one unloading; time of driver and motor constantly and profitably occupied—no need of waiting at terminals; loads may often stand on extra trailers until needed—unloading and reloading frequently saved; motor on springs more yielding than those required to support load—increased durability; variety of bodies for paying load may be used with each tractor—bottom dump, rear dump, low bed, long, short, passenger busses, military outfits, etc.; starting and stopping shocks avoided in mechanism through absorption in tractor springs; all parts accessible for quick and convenient inspection; largest hauling capacity for the lowest original investment."

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New York St. John's House, London, Eng. Chicago

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OVER 3,000,000 HORSE-POWER INSTALLED OR ON ORDER
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THE War, Navy, Agriculture and Interior Departments of the United States Government, The American Bridge Co., The American Sheet & Tin Plate Co., The Carnegie Steel Co., The Pennsylvania Railroad, and the Government of the Dominion of Canada are all large users of **Venus Pencils.**

They have found that **Venus Pencils** are the best for all work of an exacting nature, where uniformity and neatness are essential. It will pay you to accept their decision, and specify "Venus Pencils" (made in 17 degrees, 6B softest to 9H hardest) when next you order a supply of drawing pencils.

To the technical man writing on his letterhead a set of nine short samples and holder will be sent FREE.

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The New **Venus Rubber** *is indispensable for all pencil purposes—unequalled for cleaning drawings, engravings and specifications. Pliable and soft. Write.*

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IMPORTANT ARTICLES
PUBLISHED IN
INTERNATIONAL MARINE ENGINEERING

APRIL, 1915

French-Built Cable Ship Edouard Jeramec. Illustrated.
Refrigerating Plant on the First American Steamer to Bring Frozen and Chilled Meats from the Argentine. Illustrated.
New Southern Railway Coaling Pier at Charleston, S. C. Illustrated.
Construction of the Welland Ship Canal. Illustrated.
Stability of Vessels as Affected by Damage Due to Collision. Illustrated.
Installation of 120 Horsepower Bolinder Oil Engine in Pilot Schooner Gracie S. Illustrated.
Electric Towing System at the Panama Locks. Illustrated.
Introduction of a Modern Method in Shipbuilding. Illustrated.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers.
Two New Crandall Railway Dry Docks. Illustrated.
The Latest French Destroyers. Illustrated.
Output of Japanese Shipyards in 1914. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
The Old Navy and the New.
Letters from Marine Engineers:
- Economy of Coal and Boiler Corrosion.
- Interesting Change in Twin Screw Steamer. Illustrated.
- Preventing the Freezing of a Keel Condenser.
- Warship Construction in Navy Yards.
- A Criticism.

Recent Launches.
Marine Articles in the Engineering Press.
New Books for the Marine Engineer's Library.
Engineering Specialties. Illustrated.
Personal.

MAY, 1915

Southern Pacific Ferry Steamer Alameda. Illustrated.
French Battleships Bretagne and Provence. Illustrated.
Launch of the Gulfcoast. Illustrated.
Speed Control on Dreadnought Pennsylvania. Illustrated.
Latest Developments in Marine Electrical Engineering.
Application of Electricity to Propulsion. Illustrated.
The Operation of a Marine Diesel Engine.
Annual Convention of the American Society of Marine Draughtsmen.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers. Illustrated
Loss of Submarine F-4. Illustrated.
The Craig Diesel Type Marine Oil Engine. Illustrated.
Weights of Solid Four-Blade Propellers. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers.
Letters from Marine Engineers:
- Shipbuilding in Navy Yards.
- The Present Position of the Marine Distallate (Paraffin) Engine. Illustrated.
- Gas Engine Needle Valve Settings. Illustrated.
- An Interesting Bit of History. Illustrated.

Marine Articles in the Engineering Press.
New Books for the Marine Engineer's Library.
Engineering Specialties. Illustrated.
Personal.
Obituary.

JUNE, 1915

The Latest United States Dredges. Illustrated.
Dredge Tender for U. S. Army Engineers.
The Reconstruction of U. S. Dredge Barnard. Illustrated.
Hydraulic Dredge For Cuyahoga River Improvement. Illustrated.
Types of Dredgers Built in the United Kingdom.
Four-Yard Government Dipper Dredges. Illustrated.
Twin Screw Bucket Ladder Dredger for Tasmania. Illustrated.
Electrically Driven Hydraulic Dredge. Illustrated.
Government Dredges for Improving the Arkansas River. Illustrated.
Recent Ellicott Pipe Line and Sea-Going Hydraulic Dredges. Illustrated.
The Most Powerful Dipper Dredges in the World. Illustrated.
Ten-Yard Dipper Dredges on the Cape Cod Canal. Illustrated.
Forty-Two Inch Hydraulic Dredge Foyers. Illustrated.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers.—III. Illustrated.
Davits and the New Requirements. Illustrated.
Application of Electircity to Propulsion. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers.
Letters From Marine Engineers:
- How Compressed Air Saved the Steamship Floriston. Illustrated.
- Some Hazardous Experiences at Sea.
- Failure of Condenser Head. Illustrated.
- An Unexploded Boiler. Illustrated.

Marine Articles in the Engineering Press.
New Books for the Marine Engineers' Library.
Engineering Specialties. Illustrated.
Personal.

JULY, 1915

Modern Submarines in War and Peace. Illustrated.
The Largest Hopper Bucket Dredger.
Auxiliary Naval Vessels. Illustrated.
Steamer Emblane. Illustrated.
The Marine Terminals of Beaumont, Texas. Illustrated.
Development of Auxiliary Sailing Ships.
Completion of Locks and Dam No. 17 on the Black Warrior River. Illustrated.
Large Motor-Driven Railway Train Ferry. Illustrated.
Davits and the New Requirements. Illustrated.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers. Illustrated.
Japanese Liner Fushimi Maru. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Some Defects and Remedies of Marine Diesel Motors.
- The Need of an Enrolled Naval Reserve.
- Poor Circulation in Boilers. Illustrated.
- Repairs to a Babcock & Wilcox Boiler. Illustrated.

Grab Dredgers. Illustrated.
Marine Articles in the Engineering Press.
New Books for the Marine Engineer's Library.
Shipbuilding and General Marine News. Illustrated.
Engineering Specialties. Illustrated.
Personal.

"An Engineer's Catalogue" has just been published by the Bantam Anti-Friction Company, Bantam, Conn., manufacturer of ball and roller bearings and of "the only propeller thrust for high speed."

A tool holder pamphlet and a new catalogue have just been issued by J. H. Williams & Company, 63 Richards Street, Brooklyn, N. Y., manufacturers of drop-forgings of all kinds. Anyone interested in tool holders should be sure to send for a copy of both publications.

Terry turbines for driving auxiliaries are described in a Terry Steam Turbine Company, Hartford, Conn. Every engineer, shipbuilder and naval architect should send for a copy of each of these bulletins. They are "Minnesota Reprint 1254," "Generator Bulletin 144," and "Pump Bulletin 194."

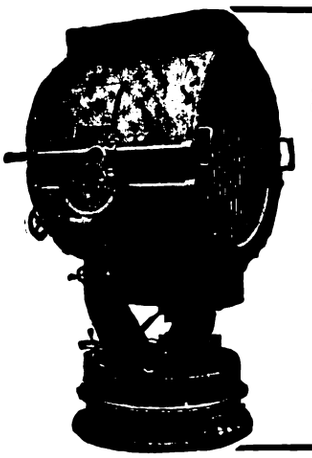
Bronze gate valves for marine service are one type of a very large line of valves for all purposes described in illustrated catalogue No. 50, issued by the Lunkenheimer Company, Cincinnati, Ohio. Every user of valves and similar steam specialties should send for a copy of this catalogue.

The Powell "Irenew" valve is described in a circular just published by the William Powell Company, Cincinnati, Ohio. The special features of this new valve show the disk and seat ring cast of white "Powellium" bronze, which is stated to insure long life—the bevel ground joint connecting body and bonet, swivel union nut and thread on the outside of the valve body where the steam can't reach them, producing this result. Red lead or cement is not necessary to make the valve tight.

Reflex water gages are described by the Jerguson Gage & Valve Company, 504 Broad building, Boston, Mass., in a catalogue the company has just issued. The use of these gages is stated to furnish quick and reliable observation of the water level. They are claimed to be safe, sure and durable at high pressures, not to be affected by cold air drafts, and to be the most effective protection against injuries to boilers and workmen. They are easily applied to all types of gage glass fittings.

The Wendel centrifugal coal drier is described by the Link-Belt Company, Chicago, Ill., in Bulletin No. 212, which the company has just published. "The Wendell Continuous Automatic Drier is a machine for the drying of washed coal for cooking purposes and the smaller sizes of steam and domestic coals. Although primarily designed for drying coal, it has a wide range of usefulness and may be employed for removing mechanical moisture from many materials. We invite inquiries in regard to any drying problems of this nature."

Marine Bulletin A, second edition, has just been issued by the Talbot Boiler Company, 120 Liberty street, New York, and a copy will be sent to any of our readers upon request. "The Talbot steam power plant is as different from the ordinary steam power plant as an automobile is from a traction engine. This is the reason that it sometimes is known as a 'steam motor,' as it possesses all of the good features of the gas motor combined with the good features and acknowledged reliability of the steam power plant, and in addition to these has produced new records of thermal efficiency heretofore impossible with any type of power-producing equipment. The most forcible argument to back up these statements is in the contingent selling price or our guarantee backed by cash."



ELECTRIC SEARCHLIGHT PROJECTORS

Made in any size and any candle power from the small yacht lamp, to the largest navy standard type.

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The Carlisle & Finch Co.
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BUSINESS NOTES

REORGANIZATION OF THE BAYONNE CASTINGS COMPANY.—The management of the Bayonne Castings Company, Bayonne, N. J., has been reorganized. J. F. McNamara is general manager, vice W. E. Oakley, resigned. R. C. Stanley, the president and treasurer of the company, informs us that numerous changes have been made in the personnel of the foundry and office forces.

PORT ORFORD CEDAR on the Cup Challenger. We are informed by the C. A. Smith Lumber Company, Oakland, Cal., that its Port Orford cedar was used to deck Sir Thomas Lipton's Cup challenger, and that the company is now negotiating with the British Admiralty for a quantity of Port Orford cedar for deckings. Large quantities of this cedar are also being delivered to the United States Government at their various yards and construction stations.

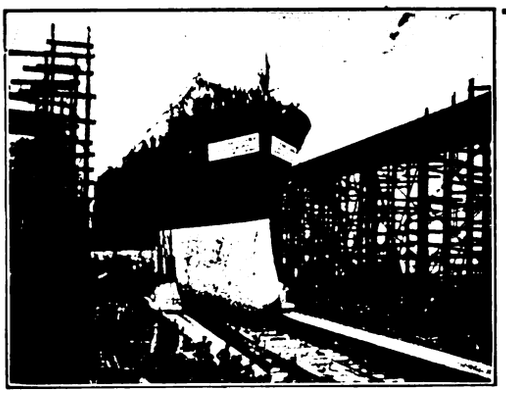
LITIGATION ENDED.—The Marion Steam Shovel Company and the Marion-Osgood Company, of Marion, Ohio, write the INTERNATIONAL MARINE ENGINEERING as follows: "We are pleased to announce that the litigation that has been carried on for the past several years between the Marion Steam Shovel Company and the Marion-Osgood Company has been satisfactorily and amicably adjusted. This settlement covers all machinery heretofore shipped by the Marion-Osgood Company, and grants to them shop rights to continue the use of those patents held by the Marion Steam Shovel Company which are involved in the Marion-Osgood Company's machines as at present constructed."

WHY THE SILICA?—A 24-karat pure gold chain will not prove a durable chain. Neither will a pure all-graphite paint prove a durable protective covering. The copper alloy in a 14 or 16-karat chain insures durability. The silica of a silica-graphite paint adds durability and supplies just enough "drag" to prevent too thin a coat. Neither graphite nor silica alone provides so good a pigment as do both combined. Nature's own mixture of silica and graphite, *i. e.*, a natural formation in which the two are intimately attached, has proven itself to be the best form of pigment, because, unlike other forms where free silica is a constituent, the silica does not separate itself from the graphite and settle into a hard mass. Silica should be mined with the graphite, so that particles of each cling to the other and do not settle when mixed with oil.—From *Graphite*, Jersey City, N. J.

ROSS SCHOFIELD CIRCULATORS.—Among recent installations by the Ross Schofield Company, 17 Battery Place, New York, are those on the following vessels of the Luckenbach Steamship Company: S. S. *J. L. Luckenbach*, 12 furnaces; S. S. *Lewis Luckenbach*, 9 furnaces; S. S. *Hattie Luckenbach*, 6 furnaces; S. S. *Jacob Luckenbach*, 6 furnaces; S. S. *Florence Luckenbach*, 9 furnaces; S. S. *Harry Luckenbach*, 8 furnaces; S. S. *Pleiades*, 6 furnaces; S. S. *M. E. Luckenbach*, 4 furnaces. We are told that up to date over 3,500,000 horsepower have been fitted to vessels of many of the principal steamship lines of the world.

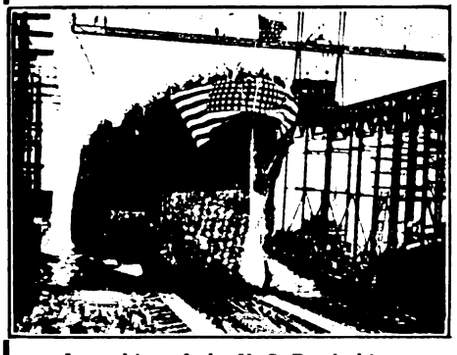
THE BRUNSWICK REFRIGERATING COMPANY, New Brunswick, N. J., reports the following additions to its marine orders since last reported: Bowring & Company, New York, have had installed on the steamship *Florizel* a 2-ton plant. The Brunswick Refrigerating Company took the order for the plant and refrigerators and installed them complete within a very few days. The Texas Company ordered a plant for the seventh boat of theirs to be equipped with a Brunswick refrigerating and ice-making plant, when they ordered a 1-ton plant for the steamship *Texas*. The order was received one afternoon and the material shipped the next afternoon. Installation was made while the boat was at sea. A 1-ton plant installed on the *Scottish Prince* of the Prince Line made the tenth plant installed on this line. From the Fore River Shipbuilding Corporation was received an order for two 2-ton plants for the steamer which they are now building for the Cuba Distilling Company. This makes the fourth steamer of this line equipped with Brunswick plants. Through the New York Shipbuilding Company the Brunswick Refrigerating Company has received orders for 2-ton plants for the Petroleum Transport Company and the Standard Oil Company of New York. All four ships of the Standard Oil Company of New York now being built at the New York Shipbuilding Company are being equipped with 2-ton Brunswicks. The Standard Oil Company of Louisiana has placed an order with the Brunswick Refrigerating Company for a 1-ton plant for the towboat *Standard*. From the Newport News Shipbuilding & Dry Dock Company has come the order for a 1-ton plant for the Munson steamer now being built at Newport News, Va. The Brunswick Refrigerating Company can make prompt delivery on all of its apparatus and will be very glad to submit quotations to any one interested.

For Better Lubrication of Reciprocating Engines use LUBROLEINE MARINE ENGINE and CYLINDER OILS



Launching of the U. S. Battleship "Pennsylvania"

For Forced Feed and Turbines use LUBROLEINE F.L.ENGINE AND LUBROLEINE TURBINE A OILS



Launching of the U. S. Battleship "New York"

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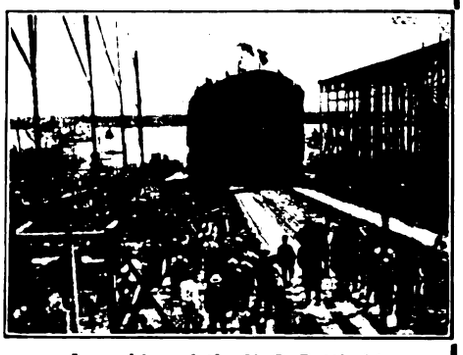
Used by the prominent shipbuilders throughout the world.

Send for above photos and further particulars.



Launching of the U. S. Battleship "Wyoming"

FISKE BROTHERS REFINING COMPANY

Pacific Coast Distributors, Waterhouse & Lester Co., San Francisco NEW YORK

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HELP AND SITUATION AND FOR SALE ADVERTISEMENTS

No advertisements accepted unless cash accompanies the order.

Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

Marine machinist wanted to establish a repair shop at a new shipyard. Special inducements will be made to the right man. Address *N. H.*, care of INTERNATIONAL MARINE ENGINEERING.

For Sale—Tug *Runnels*, 58.9 x 15.3 feet; depth, 6.9; draws 8 feet of water; gross tonnage, 37.87; net, 18; 16 square high-pressure engine; boiler about 120 pounds. *Dorr E. Warner, Attorney*, Cleveland, Ohio.

Second-Hand Books for Sale.—All in perfect condition. Bauer & Robinson's "Marine Engines and Boilers"; Bauer & Robinson's "Marine Steam Turbine"; Moyers' "Steam Turbine"; Taylor's "Speed and Power of Ships"; Dyson's "Propeller Design"; Gray's "Marine Boiler Design"; Hobart's "Electrical Propulsion of Ships"; Seaton's "Pocketbook of Marine Engine Design"; Simpson's "Naval Construction"; Unwin's "Machine Design," Vol. 2, on Engines. No reasonable offer refused. Apply *Books*, care of INTERNATIONAL MARINE ENGINEERING.

THE WATERBURY COMPANY, manufacturer of manila, sisal and wire rope, has removed its general offices from 80 South street to 63 Park Row, New York.

NEW OFFICE OPENED BY ENGBERG'S.—Engberg's Electric & Mechanical Works, St. Joseph, Mich., have established a New York office at 39 Cortlandt street.

INCREASE IN COST OF PAINT.—Holzapfel's American Compositions Company, 18 Broadway, New York, writes INTERNATIONAL MARINE ENGINEERING as follows: "White lead as used in the form of paint has been accused of causing sickness and death among painters, and as a result the manufacture and use of lead paints in France, Germany, and of late also in England, has been so circumscribed as to force users of paint to use other materials. Among these Zinc White has been largely adopted. In the meantime lead is being used in a more direct manner for destroying human life, and its use for cartridges has raised the price to an almost unknown level, while zinc, which is also used in connection with the manufacture of war supplies, has more than trebled in value. The result has been that manufacturers of paints have given notice to their clients of considerable increases in price, increases which, however, do not nearly represent the enormous extra cost of the raw materials, so that the inevitable inference must be that manufacturers will have to use a considerable percentage of adulterants in order to be able to supply their goods to their clients at the prices now ruling. In such circumstances it may be in the interests of the shipping public to turn their attention to several specialties in the paint line manufactured by Holzapfel's American Compositions Company, which has at all times manufactured its paints without lead, and which in their manufacture uses relatively small quantities of Zinc White. One of the lead paints hitherto largely used by the shipping trade is black topside paint, which consists chiefly of white lead and lampblack. Instead of this Messrs. Holzapfel's manufacture a quick-drying topside paint entirely without lead which dries with a good gloss in less than an hour, and which covers more than double the surface that is covered by the ordinary topside paint, and which is still obtainable at the old price. A gray topside paint can also be obtained from Messrs. Holzapfel at the old price. Holzapfel's Danboline, which is largely used throughout the shipping trade in all parts of the world for the painting of holds, hatches, peaks, etc., is made without either lead or zinc, and is still obtainable at the old price, as also Holzapfel's Lagoline paints, white and light colors only excepted, prices of which, owing to their contents of zinc oxide, have had to be raised."

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TRADE PUBLICATIONS.

From Engberg's Electric & Mechanical Works, 16 Vine St., St. Joseph, Mich., we have received Bulletin No. 101 on direct-current generating units from 1 to 50 kw. The bulletin gives a complete description of the details of the generator and engine, fully illustrated and handsomely printed, with dimensions and weights of all units. It is a catalogue which will be of interest to all who wish to study the construction of direct-current machinery and of moderate size vertical engines, as the detail illustrations are clear and instructive.

The Cummings engine log system—"The Brain of the Ship"—is described in a catalogue just published by the Cummings Ship Instrument Works, 110 High St., Boston, Mass. "When your ship is running through a fog or you want to cover a certain distance on a given course, you need an instrument that will tell you exactly how fast and how far you have gone. The Cummings engine log system shows automatically and continuously in the pilot house the speed of the ship, the distance run on any course, the speed of the propellers, the direction of rotation, etc. You don't need to ask the engineer for this information. You get it yourself instantly and accurately." This system has already been installed on 24 ships where it is claimed to have proved invaluable. It is designed for any type of power driven vessels, and is specified by the United States Government for all types of naval vessels.

An absolutely new process of freeing the condensation of exhaust steam in a surface condenser from oil, so that it will be a clear, soft, solvent feed water, has been placed on the market by William Andrews, Inc., 120 Liberty St., New York, and is fully described in circular D-1, which the company has just published. The circular states, in part, that the "Deoleizer" takes out oil; not a part or most of it, but all of it—every last trace of it—a thing never before accomplished. The water is stated to be freed from the taste of oil, so that it is fit to drink. There is no mechanism. The active agent is "Oleite," which is the company's trade name for a complex manufactured mineral substance of a microscopically cellular crystalline structure, which was accidentally discovered to have a marvelous natural affinity for oil in emulsion. The company states that it will install a "Deoleizer" strictly on the basis of guaranteed results.

A handsome picture of the United States war vessels in the Hudson River, at the time they were recently reviewed by President Wilson, is published by the Blake & Knowles Steam Pump Works, 115 Broadway, New York, in a circular just issued. The object of this circular is to call attention to the Blake pumps with which nearly every ship of this fleet is equipped. The circular goes on to state that more than ninety per cent. of the vessels built for the United States Navy since the time of the Civil War have been outfitted with Blake pumps. A copy of this circular will be sent free to any of our readers upon request.

Pencils free—The American Lead Pencil Co., 206 Fifth Ave., New York, states that to the technical man, writing on his letterhead, a set of nine sample pencils and a holder will be sent free. In a catalogue the American Lead Pencil Company has just published the statement is made that the War, Navy, Agriculture and Interior Departments of the United States Government, the American Bridge Co., the American Sheet and Tin Plate Co., the Carnegie Steel Co., the Pennsylvania Railroad and the Government of the Dominion of Canada are all large users of its Venus pencils.

"From Stone Cold to Full Power in Ten Seconds."—This is the claim made for the Southwark-Harris valveless oil engine, in a catalogue which has just been published by the Southwark Foundry & Machine Co., 428 Washington Ave., Philadelphia, Pa. This engine is one of the two-cycle type, built in two, four, six or eight cylinder units with multi-stage vertical air compressors worked off the crank shaft. Entire control is by means of a single hand wheel, which through interlocking devices enables the engine to start on compressed air and gradually build up its operation on oil while still working on air, or reverse from "full speed ahead" to "full speed astern" in a few seconds. It is stated also that it can be started immediately with a load on, or can be slowed down with equal certainty and greater ease than a steam engine of similar power. A 240 horse-power set which is now installed in a sea-going vessel has been in operation for several months. It is said to be extremely economical, and to give no trouble of any kind. This engine has four 9-inch cylinders with 13-inch stroke and makes 300 revolutions per minute. Fuel or crude oil is used. Ignition is by temperature of compression. It is air starting and can be directly reversed from "full ahead" to "full astern" in five seconds.

The Purpose of the Deoleizer

Is to De-o-le-ize:—

to take out oil; not a part of it or most of it, but **all of it;** EVERY LAST TRACE OF IT! a thing never before accomplished. In short, it will convert any EMULSION OF OIL, such as arises from the **condensation of exhaust steam in a Surface Condenser,** into clear, soft, solvent **feedwater,** not partially or nearly, but **ABSOLUTELY freed from oil.** It is freed even from the **taste** of oil so that it is fit to drink. (An interesting story in this connection is told in our Leaflet No. 2.)

There is no mechanism. The active agent is Oleite, which is our Trade Name for a complex manufactured mineral substance of a microscopically cellular crystalline structure which was accidentally discovered to have **a marvelous natural AFFINITY FOR OIL in emulsion.**

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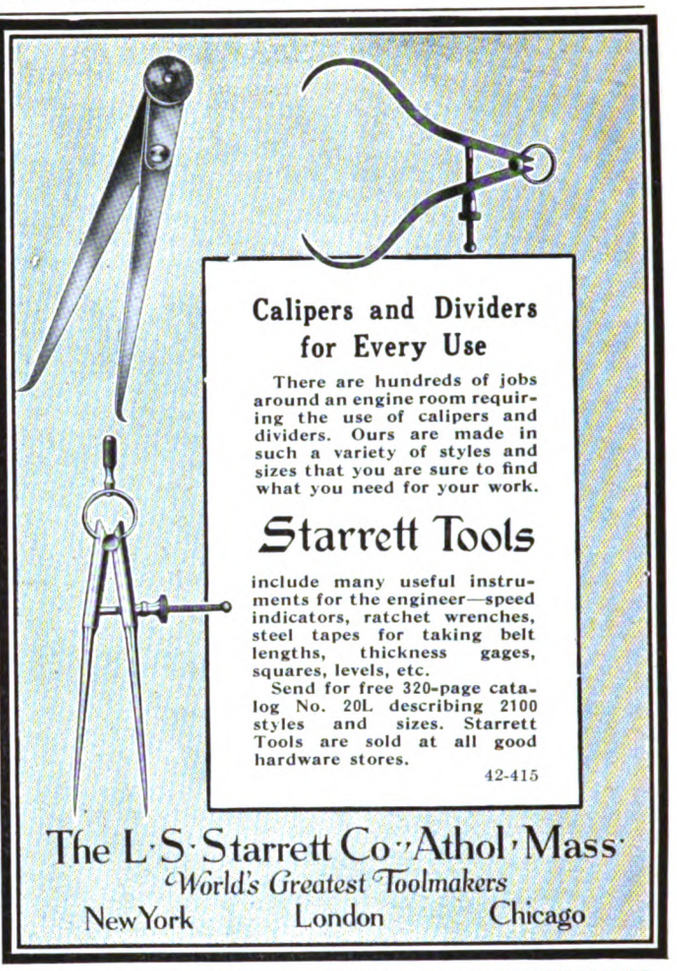
The oil engines made by August Mietz Machine Works, 130 Mott St., New York, which won a gold medal at the Panama-Pacific International Exposition, are described in a catalogue which has just been published. Among the advantages of this company's oil engines, the following are claimed: Low cost of operation (7-10 of a pound of low grade oil per horse-power hour); low cost of attendance; no stand-by losses; no auxiliaries; small space; low cost of repairs; simplicity and steam scavenging. The heat usually thrown away in the jacket water is used to generate steam, which, mixed with the charge in the cylinder, is said to give a higher mean effective pressure, more oxygen for combustion, cleaner cylinders, and thorough scavenging.

Lubrication of Pneumatic Tools is the subject of Bulletin 127, published by Department G of the Chicago Pneumatic Tool Co., 1026 Fisher Building, Chicago, Ill. "Unless pneumatic tools are kept clean, well lubricated and limited to the uses for which they were intended, they will not give the service for which they are designed. To keep the working parts of the tools clean and free from particles of foreign matter, the first thought should be given to the air itself. Wherever possible, the air supply should be drawn from some point outside the building where the air is most apt to be clean, cool and dry. In any event, a strainer should be placed over the exposed end of the inlet pipe. Such a strainer can be easily made by covering the opening with wire netting over which one or two layers of muslin have been placed. While under ordinary conditions the strainer is not essential, it helps to avoid a great many possible lubrication troubles, and not only adds to the life of the valves, piston and glands of the air compressor, but assists in keeping the dirt and grit out of the working parts of the tools. A strainer should also be placed in the pipe lines leading directly to the pneumatic tools and special strainers are made to insert between the pneumatic hammers and the hose nipple. In the lubrication of pneumatic tools, judgment should be used, for there are some machines or portions of them that require a light machine oil and other that require a heavy grease. Valves and pistons for both hammers and drills require a light machine oil such as our Airoilene, and as the compressed air which comes in direct contact with these parts has a tendency to drive the lubricant out through the exhaust it is advisable to oil such parts freely and often, say every hour while the tool is in constant use. Such portions of the tools as the gear and crank cases of 'Little Giant' drills to which the compressed air does not have direct access are best lubricated with grease such as our Airo lene grease. This grease may be forced into the crank cases through the dead air handle by means of a squirt gun or syringe or by the use of the 'Little Giant' grease machine. A filling every ten hours while the drill is in constant use gives best results."

Steam Trap Catechism is the title of a booklet which has just been published by the American Steam Gauge & Valve Manufacturing Co., 208 Camden St., Boston, Mass. This should be in the hands of every user of steam traps, and a copy will be sent free to any one sufficiently interested to write for it. Under the head of "Common Sense in Buying Steam Traps" appears the following: "When buying steam traps don't compare prices only. Compare the sizes of the orifices and what they can do. When you buy a certain size valve, pipe, or fitting you are getting what you pay for. When you buy a certain size trap you don't know what you are paying for. The only standard thing about a steam trap is the size of the pipe connection. This can be put on any kind of an iron box or casting; but the EVERYTHING which determines the value of any trap, and which is not standard, is the size of the valve orifice. You cannot specify or buy a steam trap intelligently when you go by the size of pipe connection and the pressure. This method of buying would be similar to buying a 1½ inch valve with a valve seat choked down to a hole ¼ inch in diameter. You see the 1½ inch hole in the connection, but you don't see the ¼ inch hole in the valve seat. It is just so with steam traps. You see the pipe connection, but you do not see the hole. You buy a larger trap to get a larger hole, and for this larger hole you pay a larger price. Better compare the size of the hole and not the size of the pipe connection. This is the first step in buying steam traps intelligently. Then use a little common sense in selecting the valve. Because this misleading method of buying and specifying steam traps has been so long used it has become universal. This practice has done much to divert the use of steam traps because it has given the manufacturers a chance to compete in a manner to deceive by making a steam trap so light, so small, and so cheap as to eliminate and waive every essential feature required in a steam trap which will serve the purpose for which it is intended. As long as it has the size pipe connection the manufacturer has met your specification. This sort of competition is unfair to the manufacturer who really produces a good article; and while the manufacturer of a good article loses by this misguided selection, the loss of the buyer is much greater, for he has made a purchase which is neither lasting nor efficient."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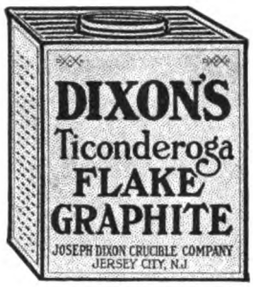

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J-M Kearsarge packing is described in catalogue 114 just published by the H. W. Johns-Manville Co., Madison Ave. and Forty-first St., New York. "The difference between a packing and a good packing is resiliency, that lasts as long as the packing lasts. If you can combine resiliency with long life, then you have a high grade packing, in which class J-M Kearsarge Rod ranks first.

A pressure regulator is described in a circular which the Foster Engineering Co., Newark, N. J., has just published. "Designed for severe and exacting service requiring close regulation, particularly for intermittent work. Suitable for working pressures up to 250 pounds. Main adjusting spring and single diaphragm obtain practically unlimited range of pressure on the terminal side from zero to within a small percentage of the initial pressure. Also particularly adapted for air service where valve is required to shut off and hold tight. It will operate equally well on horizontal or vertical pipe, either upright, inverted or inclined at any angle. Parts worn out in service are easily and quickly renewed, as all parts are interchangeable. Sizes ½" to 2", made only of composition. Sizes 2½" and larger have iron bodies, composition mounted and fitted with renewable seat-rings."

"J-M Permanite" is the title of a bulletin published by the H. W. Johns-Manville Company, Forty-first street and Madison avenue, New York. "J-M Permanite" is said to be the "perfect sheet for all purposes," including ammonia.

Nine shipbuilding cranes on one order were recently built by the McMyler Interstate Company, Cleveland, Ohio, and these are described in a catalogue the company has recently published. The cranes in question are of an entirely new type, and were built for the Philadelphia and Boston navy yards. They have a capacity of 10 tons at a 50-foot radius and 5 tons at a 95-foot radius. They are electrically operated, and so arranged at different height towers that one machine overlaps another, giving quick and accurate service to any part of the yards or ways.

Booklet About Graphite Brushes.—Operators of electric power machinery are interested in the subject of commutation and are fully aware of its importance in the electrical field. A large percentage of breakdowns in the present-day motor or generator must be charged against improper operation of commutator and brushes. Graphite brushes are designed and marketed with the express purpose of reducing commutator troubles to a minimum. A booklet, "Dixon's Graphite Brushes," explains how the characteristic lubricating qualities of graphite are utilized to this end. The entire booklet is recommended to your careful consideration, especially page three, where the advantages of graphite over carbon as a brush material are clearly set forth. An electrical service department for the solution of brush problems invites detailed statements and will advise whether Dixon's Brushes are adapted to the stated operating conditions. Frequently trial orders have made enthusiastic supporters of graphite brushes. A copy of the booklet may be obtained free upon request from the Joseph Dixon Crucible Co., Jersey City, N. J.

Centrifugal pumps are described by the Lea-Courtenay Co., 5 Main St., Newark, N. J., in a 64-page illustrated catalogue just issued. Chapter 9 of this catalogue illustrates back-to-back pumps for boiler feed on board ship. "The back-to-back pump was originally developed for boiler feeding purposes where a small quantity of water was to be handled. It has been proven that boiler feed installations requiring as low as seventy gallons of water per minute can be successfully fed by this type of pump, operated by a steam turbine, or, in some cases, motor-driven, at about one-half the cost of feeding boilers by the direct-acting type of pump. The design is very simple. It is always constructed as a two-stage pump, the various heads being obtained by the selection of proper speeds and the design of the impellers. They consist of two single-suction impellers, mounted back-to-back on the shaft with the suction side toward the bearings. One very important feature of this pump is the arrangement of the two suction flanges, one on each side. By this method the suction pipe may be connected to the more convenient one and the other blanked off. This opposed impeller principle is used to eliminate end thrust, but as all multi-stage pumps have more or less thrust, even when the greatest care is used to balance pressure, this pump is provided with a marine-type thrust bearing, which keeps the impeller aligned and takes care of thrust which may develop from unusual conditions. Another interesting feature embodied in the back-to-back type is that the impellers are made in two pieces and are finished in the inside walls and on the vanes. The outside wall is riveted to the main portion of the impeller, after which it is turned. Impellers made in this manner have given splendid success and a higher efficiency has been obtained, owing to the possibility of a perfect finish both inside and out. In addition to being used for boiler feeding, the back-to-back pump is meeting with favor in many other classes of service, and is now being manufactured in several sizes."

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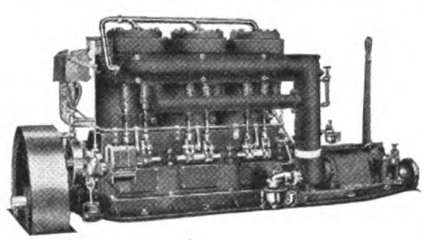

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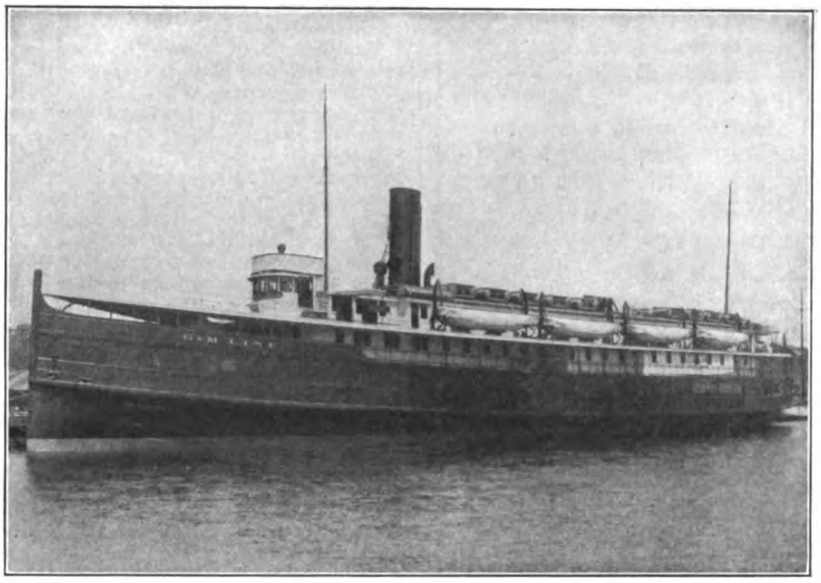

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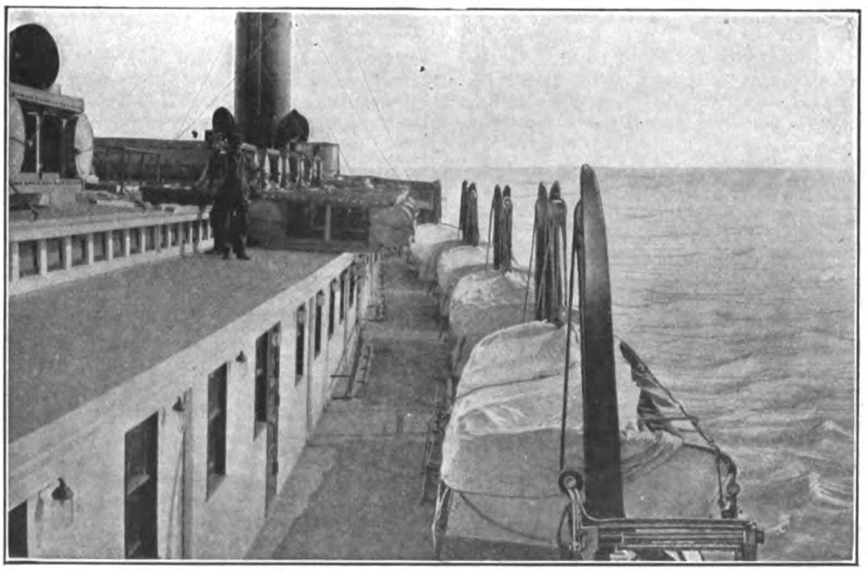

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Planimeters are described by F. Weber & Co., Philadelphia, Pa., in a circular the company has just issued. These planimeters are stated to be of improved construction, enabling a right or left motion of 180 degrees. They can be set to any scale or vernier unit by means of an adjustable tracer arm. The mean of both readings compensates all instrumental errors.

Reduction Gears for marine service are the subject of a catalogue issued by the Westinghouse Machine Co., East Pittsburgh, Pa. The Westinghouse Machine Company states that over 155,000 horse-power in high speed gears has been built or is building to date for marine and land service. In reference to the 4000 horse-power reduction gear installed on the U. S. S. Melville, the statement is made that the speed reduction of this gear is 1400 to 110 R.P.M.

The Haskell Locator is described in a 24-page vest-pocket size booklet published by Captain E. Y. Haskell, 31 Bellevue Place, New London, Conn. This device is stated to have been tested in use for over a season and to have been found invaluable for coastwise navigation. Captain Haskell writes that it has been examined by a number of competent and practical men and that it has met with their unqualified approval. He publishes in this booklet letters from a number of them. "The Haskel Locator consists of a revolving sight tube mounted on a central standard with a pointer at the lower end. The device is mounted on the binnacle hood. The sight tube is at the height of the eye and is adjustable for height. The pointer revolves just clear of the cover of the compass bowl and is pivoted at its upper end so that it may swing up clear when the vessel is rolling. Pointer and sight tube revolve together, and when the vertical wire in the tube cuts a distant object its bearing may be read off instantly on the card. The distant object may be terrestrial or celestial, provided its altitude is within the range of the instrument. In using this new device the binnacle hood remains in position the entire time. It is not necessary to remove it to set an azimuth instrument on the glass, nor need the hood be revolved to take a bearing. The Haskell Locator may be left in place without disturbing anything. Bearings may be taken with ease, day or night. There is no crouching down in an uncomfortable position, as the sighting device may be adjusted to the exact height of the navigator's eye. The observer is at the steering compass, where he can keep close watch of the course, and not on the end of the bridge fussing with a pelorus and shouting to the quartermaster, 'Are you on your course?,' 'How's her head now,' etc."

Turbo-Generators.—The many advantages of the turbo-generator in small and moderate sizes are set forth in detail in Bulletin No. 54, just issued by the Kerr Turbine Company, Wellsville, N. Y. Many interesting installations of "Economy" Turbo-Generators are also described and illustrated. Copy will be mailed upon request.

"Fibreclad" wire rope is described by the Waterbury Company, 80 South street, New York, in a catalogue just issued. This rope is stated to have many advantages over ordinary wire and fiber rope in marine work, and for boat and cargo falls "Fibreclad" wire rope is said to have lasted ten times as long as plain manila. "For rigging topping lifts, or any other use aboard a vessel, 'Fibreclad' wire rope will be found ideal. Some of the largest American-built freighters recently constructed were equipped throughout with 'Fibreclad' wire rope."

The "Vulcan" chain pipe wrench with reversible jaws is described in a new catalogue issued by J. H. Williams & Co., 63 Richards St., Brooklyn, N. Y. The catalogue states that this chain pipe wrench with its large area of chain contact prevents crushing and distortion of pipe, and affords twice the life of other tools manufactured for the same work. The "Agrippa" pipe and fittings wrench is claimed to be the best for turning irregular fittings in tight spaces where broader jaws cannot get their hold.

"When Your Ship Comes In" is the title of the leading article in "Plymouth Products" for July. This is a monthly magazine published by the Plymouth Cordage Co., North Plymouth, Mass. "Possibly you know by reputation the steamers 'Massachusetts' and 'Bunker Hill' of the Metropolitan line. They operate between Boston and New York during the summer months and are said to be the finest and fastest vessels of their class. If you have ever made the trip on one of these large steel craft and have observed the work of docking, you were probably impressed by the severe strain put upon the ropes used in this process. Like many another company we might name, the Metropolitan Line recognizes that the practice of 'Safety First' is vital in maintaining its enviable reputation. Hence one finds that its docking lines, of which so much is demanded, are Plymouth Manila. Our illustrations show scenes connected with the initial 1915 trips of the two steamers. These views indicate pretty well the large size of the vessels and the relatively small size of the lines. If you've never observed at close range the docking of a large steamer, try to do so the next time you take a trip on one."

PACKINGS FOR THE MOST SEVERE CONDITIONS

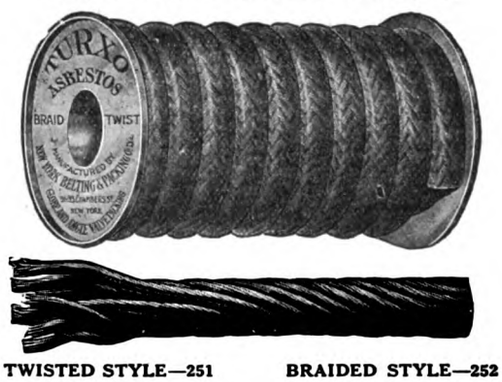
FIRO SUPERHEAT STEAM PACKING

CANNOT BLOW IT OUT

CANNOT BURN IT OUT

STYLE 1846

TURXO GLOBE AND ANGLE VALVE PACKING



TWISTED STYLE—251 BRAIDED STYLE—252

As a Valve Stem Packing, it is a Peer in its Class

NEW YORK BELTING AND PACKING CO.

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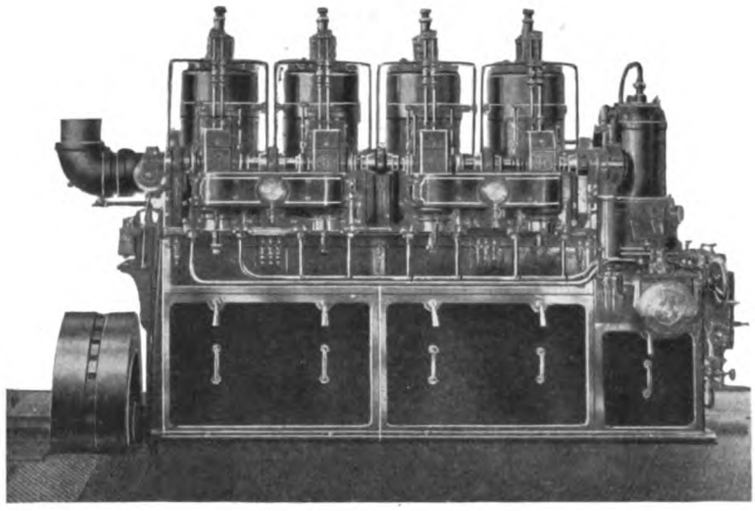

"FROM STONE COLD TO FULL POWER IN TEN SECONDS"

The time required in getting an engine from stone cold to full power is a considerable factor in producing maximum efficiency and economy.

THE
SOUTHWARK-HARRIS VALVELESS OIL ENGINE

can be made to produce full power in *10 seconds, or less.*

The Southwark-Harris Oil Engine has proved the most reliable of heavy oil engines, less complicated than the usual Diesel type with all objectionable features eliminated.

The Southwark-Harris is of the 2 cycle type, built in 2, 4, 6 or 8 cylinder units with multi-stage vertical air compressors worked off the crank shaft. Entire control is by means of a single hand wheel, which through interlocking devices enables the engine to start on compressed air and gradually build up its operation on oil while still working on air, or reverse from full speed ahead to full speed astern in a few seconds. Also it can be started immediately with a load on or can be slowed down with equal certainty and greater ease than a steam engine of similar power.

A 240 H. P. set which is now installed in a sea-going vessel, has been in successful operation for several months, with excellent economy and giving no indication of trouble of any kind. This engine has four 9-inch cylinders with a 13-inch stroke and makes 300 revolutions per minute. Fuel or crude oil is used. Ignition by temperature of compression. Air starting and can be directly reversed from "full ahead" to "full astern" in five seconds.

SOUTHWARK FOUNDRY AND MACHINE COMPANY

428 Washington Ave., Philadelphia, Pa.

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Among the large line of portable tools described and illustrated in a folder just issued by the Stow Manufacturing Co., Binghamton, N. Y., are a tool post grinder, an electric bench grinder, a radial flexible boring machine, a flexible shaft center grinder, a suspended drill, a two-spindle drill, an electric breast drill, drills for heavy work, etc. "The Stow line of portable tools is the most complete on the market. They are furnished both belt and electric driven. Much time has been expended in the design of these tools, to secure the maximum of power to size. Several of our designs are constructed to save floor and bench room, same being of the suspended type, thus putting them out of the way in a safe place when not in use and always in arm's length of your operator. Write us your requirements. We have a tool for your work that will save time and cut your cost of operation."

Centrifugal blowers and compressors for all pressures from 5 inches of water, as in mechanical draft service, up to 125 pounds per square inch, as for compressed air distribution in mines, machine shops, ship yards, etc., are described in a 64-page book issued by the De Laval Steam Turbine Co., Trenton, N. J. The development of the high efficiency, high speed centrifugal blower or compressor has been conditional upon improvements in materials, construction, shop practice and design such as are employed in the building of high grade steam turbines. By careful calculation of stresses, and by use of good materials and workmanship, it is possible to run blower and compressor wheels safely and satisfactorily at peripheral velocities of 450 to 600 feet per second, which makes it possible to develop as much as 3 or 4 pounds per square inch pressure in a single-stage blower. In the present publication numerous charts are given showing curves for the isothermal, adiabatic and actual compression of air, also the theoretical power required to compress air and characteristic curves of single and multi-stage blowers and compressors. The influence of impeller design upon the form of the characteristic is discussed at some length. Particulars are given concerning the application of centrifugal blowers and compressors to forced draft, coal gas manufacture, coke oven plants and water-gas plants, sugar factories, cupola and blast furnace work, Bessemer converters, supplying compressed air in mines, ship yards, etc. The illustrations present numerous examples of blowers and compressors directly connected to steam turbines and to electric motors.

Centrifugal Pumps for boiler feed are described in Cataoguel E, which the Alberger Pump & Condenser Co., 140 Cedar St., New York, has just issued. "The many advantages of centrifugal boiler feed pumps have led to their frequent use in marine service; they are reliable, simple and economical."

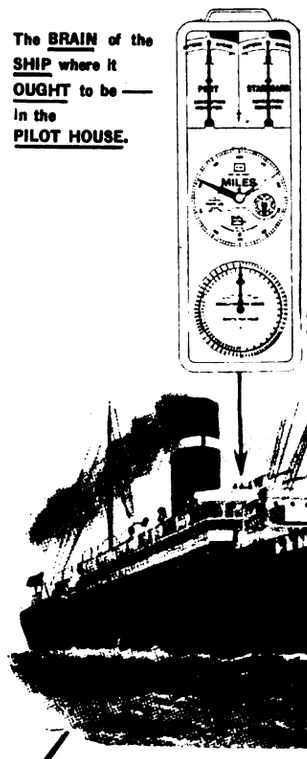
Twist drills, reamers, cutters, chucks, taps, dies, arbors, counterbores, countersinks, mandrels, wrenches and other machines and machinists' tools are described in an illustrated catalogue published by the Morse Twist Drill & Machine Company, New Bedford, Mass.

New I. O. C. System Booklet.—The International Oxygen Company has issued from its general sales office, 115 Broadway, New York City, an interesting 24-page booklet with the title, "I. O. C. System Production, Pure Oxygen and Hydrogen." The booklet is profusely illustrated, showing I. O. C. System installations as made in various parts of this country and abroad. It dwells chiefly on the economy of the production of oxygen for cutting and welding by the I. O. C. System in one's own plant, in foundries, railroad shops and industrial establishments.

Lagonda Vibrator Cleaners is the name of the latest catalogue of the Lagonda Manufacturing Company, Springfield, Ohio. This bulletin discusses the formation and removal of scale from firetube boilers, and describes and illustrates the new Lagonda vibrator cleaner, which is said to be highly effective in removing scale from firetubes. The cleaner also loosens the soot on the interior of the tubes, and it is blown out by the air or steam exhausting from the front end of the turbine. The turbine used in this cleaner is the Lagonda high-power, air or steam-driven machine. Copy of this bulletin will be sent to anyone on request.

An Enamel to Prevent Corrosion.—A rust-proofing guarantee against the corrosion of steel and iron plate and tank work is being made by the Dover Boiler Works, Dover, N. J. It uses what is called bitumastic enamel, manufactured by Wailes, Dove & Company, Ltd., Newcastle-on-Tyne, England, which has been applied extensively in marine construction. An extension of the industrial application of this enamel is now being made. The plates or tanks are first dried by means of a blow-torch and then treated with the bitumastic solution to make certain the adherence of the enamel. This material is applied by means of a brush and will withstand, it is stated, a temperature of 100 degrees F.

The BRAIN of the SHIP where it OUGHT to be — in the PILOT HOUSE.



APPROXIMATE RECKONING NOT GOOD ENOUGH—

When your ship is running through a fog or you want to cover a certain distance on a given course—you need an instrument that will tell you exactly how fast and how far you have gone.

THE CUMMINGS ENGINE LOG SYSTEM

shows automatically and continuously *in the Pilot House,* accurate knowledge of the speed of the ship, distance run, on any course, speed of propellers, direction of rotation, etc. You don't need to ask the Engineer for this information. You get it yourself instantly and accurately.

The Cummings Engine Log System is the last word in the development of ship instruments. Installations on 24 ships have proved the system invaluable, particularly when navigating in fog. Designed for every type of power driven vessel.

Specified by the United States Government for all types of Naval Vessels.

Catalog on request—no obligation.

CUMMINGS SHIP INSTRUMENT WORKS
110 HIGH STREET BOSTON U. S. A.

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Twenty-two views of Detroit's industrial plants are published as a post-card folder by the American Blower Co., Detroit, Mich. The views in this folder are printed in several colors and an endeavor has been made to show the industries most widely known. The American Blower Company will send one of them free of charge to any one who will write for it and mention INTERNATIONAL MARINE ENGINEERING.

A long-stroke boiler feed pump with adjustable steam cut-off valve has just been placed on the market by the Blake & Knowles Steam Pump Works, 115 Broadway, New York, and is described in a catalogue the company has just published. "This simple, direct-acting pump, without fly-wheel, without complication of parts, and occupying the smallest possible space, will run with a smaller steam consumption, with less attention, with less trouble and for a longer time; in short, will show greater efficiency in every respect than any other boiler feed equipment made. We can hand you the facts."

"The Oxy-Acetylene Welding Process" is the title of a number of circulars and catalogues published by the Prest-O-Lite Company, Inc., 818 Speedway, Indianapolis, Ind. The company states that Prest O Lite dissolved acetylene puts this process within easy reach. "It renders any good make of welding or cutting equipment portable—more widely useful and efficient. The equipment needed is not costly. We furnish a thoroughly high-grade welding apparatus for $60, not including acetylene cylinders, which are extra, and which are furnished under a liberal service plan. Truck and special equipment for cutting operations at extra cost."

One of the illustrations in a circular published by the McCabe Manufacturing Company, Lawrence, Mass., is a cone-bottom soap kettle, 11 feet diameter, 7/16-inch steel, which was flanged cold by the McCabe pneumatic flanging machine. All rivet holes were punched before flanging. Compare this with your present method, and send for a copy of the McCabe Company's catalogue.

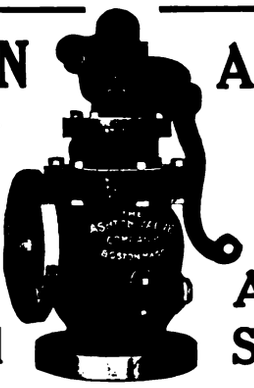
Pneumatic chippers and riveters are described in a bulletin just published by Department B of the Keller Pneumatic Tool Company, Fond du Lac, Wis. Among the advantages claimed for Keller hammers are extreme simplicity and the fact that every part exposed to wear is hardened and ground to a standard. The company states that any parts breaking, due to defects in workmanship and material, will be promptly replaced without charge.

Imperial welding and cutting equipment—oxy-acetylene process—is the subject of a catalogue published by the Imperial Brass Manufacturing Company, 1204 West Harrison street, Chicago, Ill. This catalogue states that thousands of boiler shops are saving in repair and construction work with the oxy-acetylene process of welding and cutting, and that Imperial equipment, which is stated to weld everything in metal, often pays for itself in a single operation.

"The Torch that Needs No Coaxing" is the subject of an illustrated circular which has just been published by the Mahr Manufacturing Company, Minneapolis, Minn. According to the circular, these torches light instantly upon opening the valves, regardless of whether the nozzle is hot or cold, and produce at all times a steady, non-spluttering, dependable flame. The Mahr Manufacturing Company states that this apparatus is especially valuable for boiler shop work, such as heating for flanging, offsetting, laying up laps, straightening crown sheets, taking out bags, patching, shaping, etc., also pre-heating for welding.

Duntley electric grinders are described in Bulletin 127, just published by Department G of the Chicago Pneumatic Tool Company, 1026 Fisher building, Chicago, Ill. "This line of grinders is especially adapted for use in foundries, machine shops, structural shops, and for grinding rails on street railways. The grinder has been on the market for a number of years, and we have recently made very important improvements, which make it a very satisfactory tool. Among other important features is an improved ventilating system for the windings, and three ball bearings for the shaft or arbor with splendid provision for lubrication."

ASHTON Pop Safety Valves — The Quality Standard



ASHTON Steam Gages — The Accuracy Standard

No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

ROSS SCHOFIELD BOILER CIRCULATORS
OVER 3,000,000 HORSE-POWER INSTALLED OR ON ORDER
ROSS SCHOFIELD COMPANY
17 BATTERY PLACE NEW YORK CITY

CEDERVALL'S PATENT
Protective and Lubricating Boxes
FOR PROPELLER SHAFTS
Are fitted to more than 3,000 Steamers,
with shafts ranging between 1⅞ in. and 20⅝ in. in diameter.
Our system insures maximum safety of propeller shafts, as these are running in oil, consequently no corrosion. . . . . .
The costly liners on shafts may therefore be dispensed with as being absolutely superfluous. . . . . .
FRICTION MINIMISED
Consequently
—POWER SAVED.—
Old Stern Tube Arrangements can be altered for application of this Lubricating Box at a very Nominal Cost. . .
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HOLZAPFELS
COMPOSITIONS FOR IRON AND STEEL VESSELS' BOTTOMS
In use and in stock at all ports of the world. Over 18,000,000 gross tons of shipping coated annually
Proprietors of INTERNATIONAL COMPOSITION, ANTICORROSIVE, and ANTIFOULING
HOLZAPFELS AMERICAN COMPOSITIONS CO., Offices, Welles Bldg., 18 Broadway, N. Y.
HOLZAPFELS, LTD., Milburn House, Newcastle-on-Tyne, England.

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Use of Graphite Brushes.—A rough and worn commutator will always produce sparking and not only cause annoyance and low efficiency during operation, but eventually make an extended and expensive shut-down for necessary repairs. It has been found that graphite brushes are excellent for use upon commutators because they are free from grit and are self-lubricating. Many users of electric power machinery have adopted Dixon's graphite brushes and results with them have been highly successful. Catalogue free, upon application to the Joseph Dixon Crucible Co., Jersey City, N. J.

"The Ultimate Bronze for Your Castings" is the title of a booklet just published by the Titanium Alloy Manufacturing Company, Niagara Falls, N. Y. "The Titanium Alloy Manufacturing Company, after extensive research, has developed special processes, including the use of Titanium as a deoxidizer (U. S. Patent 905,232), which have overcome the well-known difficulties in founding these valuable alloys. That this is an important industrial achievement is proven by the following statement on page 105 of the Eighth Report, A. R. C., previously mentioned: 'The view that it is difficult to obtain sound sand castings is well founded. Mons. A. LeChatelier has gone so far as to say that the difficulties are so great that the alloys present little interest from a practical point of view.' (Ref. Contribution à y'étude de la Fragilité dans les Fers et les Aciers, page 134.) These difficulties have caused high foundry losses, thus raising unduly the manufacturing costs, a condition which has resulted in the practical elimination of these important alloys from engineering specifications."

BUSINESS NOTES

A NEW SALES AND ENGINEERING COURSE has been organized by the Ingersoll-Rand Company, 11 Broadway, New York. In reference to this course the Ingersoll-Rand Company writes THE BOILER MAKER as follows: "This company has organized an apprenticeship sales and engineering course for young college graduates, who are put thourgh in classes of from fifteen to twenty. This plan involves a course in our various factories on manufacturing, assembling and testing, during which period a series of lectures is delivered by our engineers, sales heads, etc."

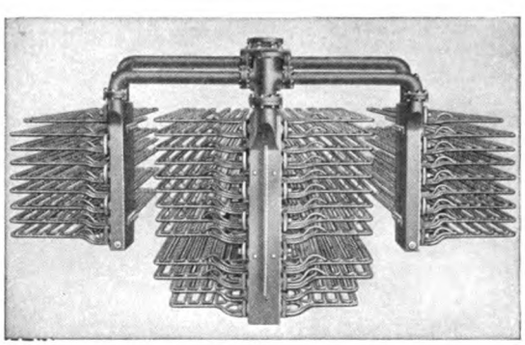
THE UNITED STATES NAVY DEPARTMENT has awarded to the International Oxygen Company, 115 Broadway, New York, the contract for the erection of a hydrogen generating plant for ballooning purposes at the aeronautic station of the navy yard at Pensacola, Fla. The International Oxygen Company has also received the award from the government for the installation of an I. O. C. system for generating oxygen and hydrogen at the Washington navy yard, Washington, D. C.

REFRIGERATING MACHINERY.—Recent orders received by the Brunswick Refrigerating Co., Marine Department, New Brunswick, N. J., include orders from the Maryland Steel Co. for the two new freight ships which they are building for the Munson S. S. Co. These machines are all of one-ton capacity. The Prince Line ordered a one-ton plant for the Eastern Prince. A one-ton plant was installed on the S. S. Brabant of the Texas Co. in three days, while the ship was laid up at Robins' Dry Dock, through the Fore River Shipbuilding Corporation. The order has been received for two one-ton plants (a duplicate unit) for each of the new steamers being built for the Luckenbach S. S. Co. A one-ton plant was supplied to Newport News Shipbuilding & Dry Dock Co., for the S. S. Montara, belonging to Crowell & Thurlow. Through Newport News has also come the order for the two-ton plants for each of the two new ships which they are building for the Standard Oil Co. of New Jersey. This makes all five ships built at Newport News for this company equipped with two-ton Brunswick plants. The S. S. Concho of the Mallory S. S. Co is to be equipped early in September with a two-ton plant when laid up for overhauling. A one-ton plant has been ordered by the Texas Co. for the S.S. Northwestern, material was delivered at Bayonne, taken up on a tug to the steamer which was anchored outside, then taken out with the tug, and the plant was installed complete in 48 hours, so that the boat was not held up at all. The machine in this case cools a meat refrigerator and vegetable refrigerator, makes 120 pounds of ice in 10 hours, and cools drinking water for the crew. The Brunswick Refrigerator Co. has its machines in stock and is able to make very prompt delivery, the Middlesex Transportation Co. running steamers daily from New Brunswick to New York, allowing of the shipment being made in one night and delivered in New York the next morning. Delivery details will be furnished to anyone inquiring, and the Brunswick Refrigerating Co. will be very glad, after looking over the vessel, to make a quotation on the proper plant for any ship.

FIRE TUBE MARINE SUPERHEATER

EIGHT REASONS WHY:

1. It is adaptable to either new or existing boilers of the fire tube type and can be applied with no change in design or construction.
2. It renders possible increase in output of boiler horse power from a given boiler plant, 10% to 20%.
3. It will produce the same power output with fewer boilers.
4. It reduces the size of the bunkers, thereby reducing the draft of the vessel with a given cargo or making possible an increase in revenue cargo.



5. It results in a saving of fuel over saturated plants, both operating under the same draft conditions, of 10% to 20%.
6. It reduces the maintenance costs by the prevention of water hammer, leaky flanges and condensation in the cylinders.
7. It does not prevent rapid, thorough and frequent cleaning of the tubes.
8. Its construction provides easy access to all screwed joints and the easy removal of the parts.

LOCOMOTIVE SUPERHEATER CO.

30 Church St., New York, N.Y. **People's Gas Bldg., Chicago, Ill.**

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THE SAFETY-ON-SEA CO. has been incorporated at Dover, Del., capital $250,000, to engage in the manufacture of, and dealing in, life-saving devices, belts, buoys, rafts, boats and marine supplies. Incorporators: Clement M. Egner, Elkton, Md.; Herbert E. Latter, Norman P. Coffin, Wilmington, Del.

THE TALBOT BOILER.—The Talbot Boiler Company, 120 Liberty street, New York, writes INTERNATIONAL MARINE ENGINEERING that the 1,000-horsepower boiler which it is building for the Pennsylvania Railroad tug *Syosset* will be tested by a naval board at the company's works. The company also tells us it has six boilers under construction at the present time for various users.

RALPH T. COE, manager of the Canadian Sirocco Company, Ltd., Windsor, since the organization of that company, has resigned, to enter the engineering service and sales field in New York State. Mr. Coe has been appointed district manager for Warren, Webster & Company and the American Blower Company, and will have offices at 519 Insurance building, Rochester, and 19 Live Stock Exchange building, Buffalo.

AUXILIARY SAILING SHIPS equipped with Bolinders direct reversible marine oil engines. Bolinders Co., 30 Church St., New York, send us an illustrated circular giving the names of a number of sailing ships equipped with its engines. Among them are the following:

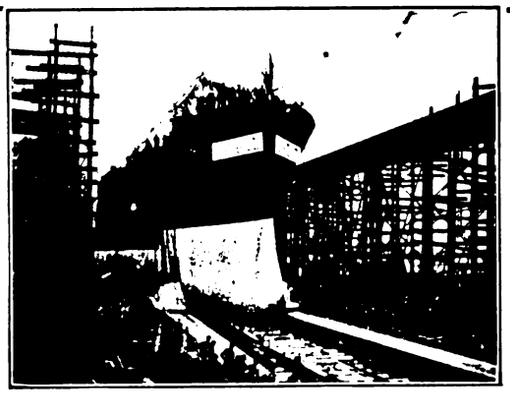
Name and Nationality.	B.H.P.	Name and Nationality.	B.H.P.
"Belem," British	640	"Eclipse," American	160
"Fingal," Norwegian	320	"West," American	160
"Kwango," Norwegian	320	"Building," American	160
"Caracas," Norwegian	320	"Gracie S," American	120
"Transatlantic," Norwe'n	320	"Rodskjael," Norwegian	120
"Czardas," Norwegian	320	"Fukuin Maru," Japanese	120
"Sigrun I," Norwegian	320	"Building," American	120
"Hjalmar Sorensen," Dan.	240	"Honorina," Danish	100
"Catharina," Norwegian	240	"Fort York," British	80
"Elfleda," Norwegian	240	"Fort Churchill," British	80
"Lota," Norwegian	240	"Fimmo," German	80
"Lapwing," Norwegian	240	"Jens Riis," Danish	80
"Transit I," Norwegian	240	"Gilbert Islands," British	80
"Linares," British	160	"Honfleur," Norwegian	80
"Morten Jensen," Danish	160	"Hygea," Norwegian	80
"Goodwin," Norwegian	160	"Pedro Toledo," Danish	50
"Albert," British	160	"Metamora," British	40
"Lindores," British	160		

ZINC AND MARINE BOILERS.—On this subject the Ross Schofield Co., 17 Battery Place, New York, writes INTERNATIONAL MARINE ENGINEERING as follows: "May we trespass upon your valuable space to draw your attention to a question that has recently become a serious problem? We refer to the consumption of zinc in marine type boilers. The price of zinc, which now stands at $600 per ton, with indications of a further advance in price, is a matter to have careful consideration. The corrosive action which renders zinc plates necessary can only be overcome by the rapid and continuous circulation of the water in the boiler. This circulation renders innocuous the deleterious matter in the water, and therefore causes a tremendous saving in zinc. Where our system is installed, we have saved owners hundreds of dollars in this direction, and at the present price of zinc these hundreds will become thousands. Estimating the consumption of zinc at one ton per boiler per annum, it is easy to see what a vast amount of zinc could be released for manufacturing purposes. We have fitted whole fleets and most of the steamers have discarded zinc, while the rest are saving from 50 per cent. to 75 per cent., and have done so for the last five years. These are no wild imaginings, but facts based upon experience of many of the principal steamship lines of the world, whose names we are willing to supply."

THE MEDAL OF HONOR FOR OXY-ACETYLENE WELDING AND CUTTING APPARATUS at the Panama-Pacific Exposition, has been awarded to the Davis-Bonrnonville Company Marion Station, Jersey City, N. J. The company writes THE BOILER MAKER as follows: "There were six competitive exhibits. The Davis-Bournonville exhibit is in Spaces 34, 35, 36, 37 of the Collective Gas Exhibit, Palace of Manufactures, showing acetylene generators, stationary and portable apparatus, welding and cutting torches, cutting machines, regulators, supplies and accessories and practical demonstrations. The Pacific Gas & Electric Company was awarded a medal of honor for the installation of pressure gas mains, services and metal installations in the Exposition, all welded with Davis-Bournonville apparatus—over 100,000 feet of 2-inch to 16-inch pipe.

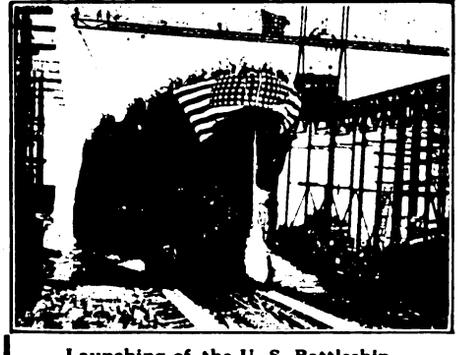
NEW EASTERN WAREHOUSES.—Joseph T. Ryerson & Son, main office Chicago, Ill., have just completed new warehouses on Westside avenue, Jersey City, N. J. Messrs. Ryerson have maintained an office for some time at 30 Church street, New York, and steel warehouses at Boonton, N. J. The new move, however, will increase the company's stocks and services, and

For Better Lubrication of Reciprocating Engines use LUBROLEINE MARINE ENGINE and CYLINDER OILS



Launching of the U. S. Battleship "Pennsylvania"

For Forced Feed and Turbines use LUBROLEINE F.L.ENGINE AND LUBROLEINE TURBINE A OILS



Launching of the U. S. Battleship "New York"

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Wanted, competent marine draftsman. Address, with references, to the Merrill-Stevens Ship Building Company, Jacksonville, Florida.

Chief draftsman, at present in charge of shipyard's machinery office, employing from 15 to to 20 men, wants change. Technical graduate. Good experience; age 36. Address *Chief Draftsman,* care of INTERNATIONAL MARINE ENGINEERING.

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is intended to greatly facilitate immediate shipments to steel buyers of the Eastern territory. The plant consists of a large mill-type building covering a ground area 350 by 250, or a total of 87,500 square feet. The building, constructed in the regular mill-type fashion with skeleton steel frame work, has corrugated steel siding and a cement tile roof with large skylight area let-in so as to provide adequate lighting facilities for the various cutting operations involved. The building is divided into four open spans, each 250 feet long, two 100 feet in width and two 75 feet in width. The two 100-foot spans are served by 15-ton capacity, two-trolley hoists, Niles cranes, while the two 75-foot spans are served by two 10-ton capacity, two trolley hoists Pawling & Harnischfeger cranes. Each one of these four spans is used for the handling of different lines of stock, which are carried in large quantities for immediate shipment to the territory served by this warehouse.

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BATTLESHIPS

Montana	3	Illinois	4
Alabama	4	New York	complete

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McDonough	8	Lawrence	36
Tingey	8	Hopkins	19
Porter	16	Blakely	8
Biddle	6	Stewart	8
Bagley	6	Barney	6
Truxton	8	De Long	17
Craven	12	Hull	10
Stringham	12	Dahlgren	12
Foote	22	Winslow	22
Mackenzie	11	DuPont	16
Worden	22	Rodgers	8
Paul Jones	6	Stockton	16
Perry	8	Reid	4
Barry	22	Fox	8
Chauncey	22	Davis	8
Bainbridge	22		

LIGHTHOUSE TENDERS.

Ivy	14	Orchid	14
Maple	14	Tulip	14

TRANSPORTS.

Logan	1	Buford	6
Sheridan	6	Burnside	2
Thomas	16		

TENDERS.

Maj. Samuel Ringgold	1	Arcata	2
Lieut. J. A. Gurney	2	Guy Howard	2

A list of merchant vessels using France packing, will be published later.

MARINE SOCIETIES.

AMERICA.

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29 West 39th Street, New York.

NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS
29 West 39th Street, New York City.

UNITED STATES NAVAL INSTITUTE
Naval Academy, Annapolis, Md.

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National Secretary—M. D. Tenniswood, 308 Vine St., Camden, N. J.

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Vice-President—H. A. Hope, Newport News S. B. & D. D. Co., Newport News, Va.
Secretary—B. G. Barnes, 40 Faxon avenue, Quincy, Mass.
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Executive Committeeman—P. H. Frohwein, New London, Conn.

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Secretary—Geo. A. Grubb, 1040 Dakin street, Chicago, Ill.
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Grand Secretary-Treasurer—Neil J. Morrison, P. O. Box 238, St. John, N. B.

GREAT BRITAIN.

INSTITUTION OF NAVAL ARCHITECTS
5 Adelphi Terrace, London, W. C.

INSTITUTION OF ENGINEERS AND SHIPBUILDERS IN SCOTLAND
39 Elmbank Crescent, Glasgow.

NORTHEAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS
Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

INSTITUTE OF MARINE ENGINEERS, INCORP.
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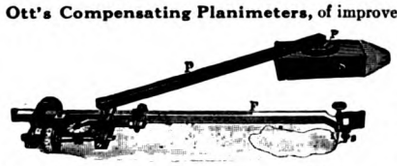

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Not PART of it—but ALL of it

Before it Enters the Boiler

LEITE is not a "boiler compound." Its use is outside the boiler. It is a crystalline mineral substance which was accidentally discovered to have a marvellous *affinity for oil* when in emulsion,—somewhat like the affinity of cement for water. It will seize every particle of oil in sight,—and once seized it never lets go. The only way to make it let go is to burn the oil off,—and this gives you your OLEITE back again practically as fresh as ever.

The function of the DEOLEIZER is not to take out 90% or 95% of the rough oil in the steam,—many devices do this,—but to take out the last minute fraction or trace of oil. This problem, as old as oil itself, and hitherto baffling, is now solved.

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Less coal; less cleaning; smaller repair bills; less insurance cost,—all this and more.

We install strictly on the basis of GUARANTEED results. The responsibility is ours. You keep the DEOLEIZER or the money, whichever you please. And we do not ask for the latter until you are satisfied with the former.

Moreover, we guarantee its annual cost *under contract.*

You may as well learn all the details today as to wait any longer. Therefore send for our Bulletins.

You can assist us greatly in our publicity work by refering to this advertisment as D-2. Our thanks in advance.

William Andrews, Inc.

120 Liberty Street New York

TRADE PUBLICATIONS

Automatic boiler circulators are the subject of a booklet issued by the Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich. According to the Eckliff Company: "The only proof of equalized temperatures is the evidence of a standard tested thermometer placed at the lowest point of the boiler, with the mercury bulb surrounded by the water of the boiler. The Eckliff is the only circulator that makes good on this Thermometer test—the only circulator that creates perfect circulation in Scotch boilers. There are no boiler troubles arising from imperfect circulation which the Eckliff will not cure. It has cured them in every installation. How about the circulation in your boilers? We can prove a saving to you before you install the Eckliffs. Get in touch with our nearest representative—he can show you some mighty interesting and convincing testimony, including some recent records of fuel savings that will surprise you. Send for booklet and data."

Non-return safety boiler stop valves and regulating and screw down check valves are described by the Lunkenheimer Co., Cincinnati, Ohio, in a booklet just published. "The great importance of non-return boiler stop valves for use on a battery of boilers is universally acknowledged, and in some countries their installation is compulsory. It is evident that should a tube be blown out or a fitting ruptured in one of the boilers of a battery, the steam from the other boilers would rush into the header and discharge into the disabled one. An ordinary stop valve would here be inadequate, as considerable time would necessarily be consumed in reaching and closing the valve, and a certain amount of danger must be anticipated. Where Lunkenheimer non-return safety boiler stop valves are used this contingency cannot possibly arise, because a slight reduction of pressure in the damaged boiler will cause the valve to act instantly and isolate it from the others in the battery, preventing damage and possible injury or loss of life. A Lunkenheimer non-return safety boiler stop valve will prevent steam from being turned into a boiler which has been cut out for cleaning or repairs, as it can not be opened by hand when pressure is on the header side. It can, however, be closed when desired. The valve can be connected in either a horizontal or vertical position. Attention is called to the outside spring and lever mechanism, which has been provided for the purpose of causing a slight counterbalancing effect to hold the valve open, this being necessary in order to counteract the influences within the valve or line which tend to actuate the disc with every slight fluctuation of pressure."

Marine machinery, steam and air motors, pneumatic hoists, etc., are described in a handsomely printed catalogue of 48 pages which has just been published by the Dake Engine Works, Grand Haven, Mich. Among the machines in the Dake marine line are steam steering engines, capstans, gangplank hoists, windlasses, spud hoists, boilers, etc. The Dake steam steering gear has been designed to meet the wants of both tug and vessel owners for a light, compact and efficient machine for pilot house service. It is described as follows "The Dake steam steering gear has been designed to meet the wants of both tug and vessel owners for a light, compact and efficient machine for pilot house service. It consists practically of two standards on a flat base, supporting a shaft carrying a chain wheel for rudder chain, and also the hand steering wheel. The steering wheel shaft carries a gear which is operated by gearing from engine shaft. The engine, which is of our Dake reversing type, will start, stop or reverse instantly by means of the reversing throttle which has lever connection with hand wheel. In operation it requires only a slight movement of hand wheel to port or starboard to start, stop or reverse the engine at any point. The hand wheel being loose on top shaft allows shaft to revolve in either direction independently of hand wheel. Rawhide pinions are used in order to make the machine practically noiseless. Arrangements are made to change the gear from steam to hand power in a few seconds by placing a pin, provided for this purpose, through the outer collar and hub of hand wheel, and by lifting the throttle lever from wheel and sliding out intermediate pinion, which is placed on a feather key. As shown in cut the machine is equipped with an automatic closing device consisting of a traveling nut, which locks into two stationary ones, closing the steam valve at the hardover points of quadrant. These lock nuts can be adjusted to allow the right quadrant travel. The machine is also furnished with a brass hand lever attached to throttle valve, making it optional with the pilot to use either this lever or hand wheel for steering. An indicator is also supplied which shows the position of the rudder at all times."

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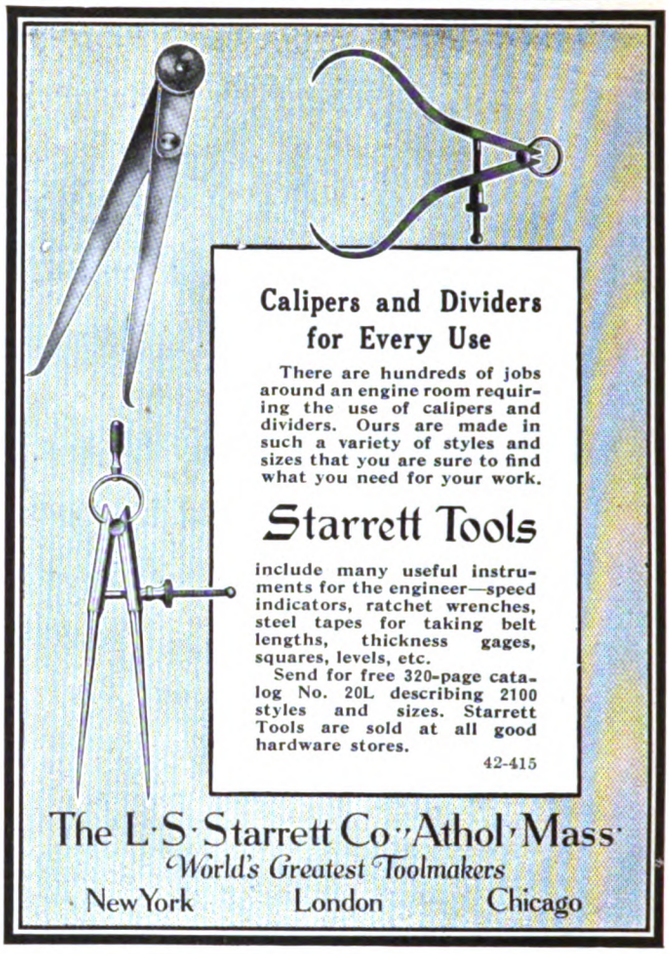
Generating sets for marine service are described in bulletins 218-0, 210-0 and 205-0, which have just been published by the B. F. Sturtevant Company, Hyde Park, Boston, Mass. Sturtevant generating sets comprise steam engine, turbine, and gasoline engine sets; all especially designed and developed for use on board ship. All three types are built to meet navy specifications and are stated to have been on the market a sufficient number of years to prove that they are high grade, long-lived, dependable units.

"The Use and Abuse of Ball and Roller Bearings." This is the title of a new twenty-page treatise by F. J. Jarosch, Chief Engineer of the Bearings Company of America. The text gives explanations and experiences which help in the selection, mounting and lubrication of ball and roller bearings in automobile gears and in all other rotating parts and is intended to help in detecting the real cause of trouble. Nineteen drawings are used to illustrate the text matter. Mr. Jarosch contributes in a very practical way, valuable thoughts to a much discussed subject, and automobile engineers as well as many others who are interested in the subject will be glad to know that a copy of this treatise may be obtained free upon request from the publishers, the Joseph Dixon Crucible Company, Jersey City, N. J.

Electric Heating is the title of a 96-page catalogue just issued by the Simplex Electric Heating Company, Cambridge, Mass. Many of this company's products are especially designed for use on board ship, among them being cooking and heating appliances, such as Simplex coffee percolators, disc stoves, tea kettles, flat irons, chafing dishes, etc. "After many years' experience with all the known methods of making electric heaters, we have developed the fact that no durable, reliable heater can be made to operate at the temperature required for ninety per cent of the work electric heaters are made for, unless the electric heating element is so arranged as to have uniform temperature, uniform and rapid conduction of heat to the thing to be heated, and that the heating element be sealed in place. No method covers all these requirements except the Enamel Method, by which the heating resistance is imbedded and sealed in an insulating coat of enamel burned on to the article to be heated. For eighteen years constant effort has been put forth to develop the enamel and the resistance element to a state that would enable us to secure a product that under all ordinary conditions of use would prove durable for years. That this has been accomplished is evidenced by the fact that electric heaters are no longer a novelty, and that our product is in demand throughout the civilized world; our export business to-day is equal to the entire output eight years ago. While having a large number of patents covering other methods permitting cheaper production cost, after exhaustive trials we have set them aside because they were wrong in principle and unsatisfactory in continued operation. Improvements in enamel and the heating element have been material, and insure our product to be thoroughly reliable."

Ozonair System of Food Preservation is the title of a catalogue which has just been published by Ozonair Limited, 96 Victoria street, Westminster, London, S. W. "As an example of the preservative power of ozone, an experiment was made a short time ago under very stringent conditions. Two pieces of freshly killed beef were taken, of equal size and shape. One was placed in a small box with a content of about 2 cubic feet. The box was arranged with holes for natural ventilation. The other piece was placed in a similar box having at the bottom of it a small ozone generator of the round type. The two boxes were placed in the same room having an average temperature of about 60 F. On the fourth day the piece under ordinary conditions was in an advanced state of putrefaction, while the piece in ozonized air was perfectly sweet and in good condition, and continued so for a further period of twenty-one days. It had thus been kept in perfect condition for a total of twenty-five days. The expert, under whose observation the experiment was conducted, stated that the result was very wonderful, and the more so from the fact that owing to the crude conditions the temperature in the box containing the ozonizer was raised to an average of about 75° F. In addition to this, the room in which the experiment was conducted was an ordinary room in which work was being carried on by many persons. Similar experiments were carried out at the request of the Ministry of Commerce at Moscow some years ago. A chicken was divided into three pieces; one of these was placed in a cold storage room, the second one was exposed to a stream of ozonized air at a temperature of about 68° F., and the third was placed in a room of similar temperature in ordinary air. After a fortnight it was found that the piece exposed to the ozonized air was perfectly fresh, whereas the one in the cold room was impregnated with a musty smell. Needless to add, the third piece, which had been placed in the room with an ordinary atmosphere, was completely decomposed."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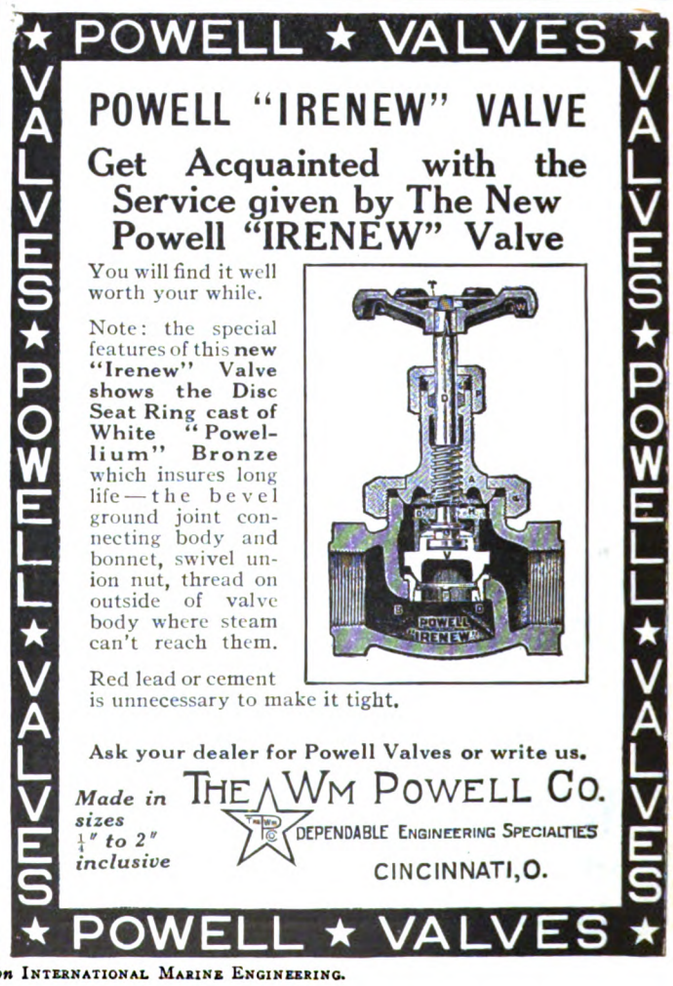
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B-8

A national contest and campaign in the interest of electric lighting has been inaugurated by the Edison Lamp Works of the General Electric Company, Harrison, N. J., to be held in connection with the celebration of Edison Day, October 21st, the 36th anniversary of the invention of the electric incandescent lamp by Thomas A. Edison. Thirty-three grand prizes and 2,000 smaller prizes, amounting to $2,500 are offered and the conditions are such that either boys or girls may compete with equal chances. The contest will be carried on in co-operation with lighting companies and dealers all over the United States. The first prize for boys is a $275 Indian twin motorcycle, and for girls is a $200 Edison Diamond Disc phonograph, with $75 in cash for records. The second prize for boys is an $90 Evinrude detachable rowboat or canoe motor, and for girls is an $80 order on any jeweler for a choice of jewelry; and so on down the line. The conditions of the contest provide that each entrant must be under eighteen years of age, live in or near a city or town having electric light in which a distribution of the cards for crediting Edison Mazda Lamp sales must be made. The contestant can secure from the local lighting company or agent for Mazda Lamps an official contestant's card and full particulars in reference to the contest.

"The Brain of the Ship." This, according to the Cummings Ship Instrument Works, 110 High street, Boston, Mass., is a good name for the Cummings engine log, which is placed in the pilot house and which is said to register the exact distance traveled and to eliminate the possibility of accident or loss of time. "When your ship is running through a fog, and when you want to cover a certain distance on a given course, you need an instrument that will tell you instantly and accurately how far you have gone."

Hammond water meters are described in Bulletin 20, which has just been issued by the Alberger Pump & Condenser Company, 140 Cedar street, New York. "The measurement of water or other liquids by means of the Hammond meter consists of alternately filling and emptying tanks of known capacity and recording the number of trips in exactly the same manner that engineers customarily measure water in tanks by hand when conducting tests for boiler evaporation, steam consumption of engines and turbines, or for the duty of pumping engines, the only difference being that in the former case the operation is automatic while in the latter case it is manual. The process of filling and emptying tanks manually when done with the utmost precision is accurate enough for the general run of formal short duration tests, but it is very cumbersome. Most engineers realizing that the greatest care must be exercised to guard against errors, place two attendants at each station to vouch for the findings. The Hammond meter is more accurate and more reliable for formal tests of this character because in its operation the element of personal equation is eliminated. However, the greatest field of usefulness for the Hammond meter is in its daily application of measuring boiler feed water and the condensation removed from surface condensers, which are condensing exhaust steam from engine and turbine prime movers, thus giving a continuous test of the boiler evaporation and of the steam consumption of the individual main power units."

A new process for removing oil from water is the subject of a bulletin which has just been placed on the market by William Andrews, Inc., 120 Liberty street, New York. The gist of the matter is condensed on the first page of the catalogue, and reads as follows: "The complete removal of cylinder oil from the emulsified returns from a heating system or surface condenser has come to be accepted by engineers as a practical impossibility. No effective device for that purpose now found in the market. Stated otherwise: Oil, once it is emulsified, cannot be wholly separated or removed, but now comes the Deoleizer and removes it; not a part of it or the most of it, but all of it; every last trace of it (or strictly, within six parts in ten million). The Deoleizer looks like a filter, but it is not a filter. It does not depend upon the mechanical straining out of oil in passing through voids in granular or fibrous material. It depends upon an entirely new principle which is the peculiar property of Oleite. Oleite is not an invention, it is a discovery. It is a complex manufactured mineral substance of a microscopically cellular and sharply crystalline structure. It was discovered while experimenting for a wholly different purpose. Its valuable property is an inherent and powerful affinity for oil. It acts not like a filter on the surface only, but throughout the mass; and largely irrespective of the size of voids. It wants oil and will have it It lets no drop escape its insatiable appetite. Another property is that it is substantially indestructible. Hence, when saturated it can be emptied out, the oil burned off, the Oleite recovered and used over again several times without losing its properties. Hence, since it costs next to nothing to operate, its saving is net. Since we know the above statements to be facts our business is based on guaranteed performance failing which (and we have never yet failed) the Deoleizer is ours and the money is yours."

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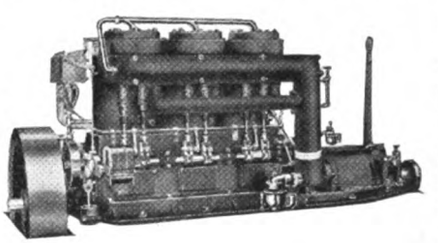

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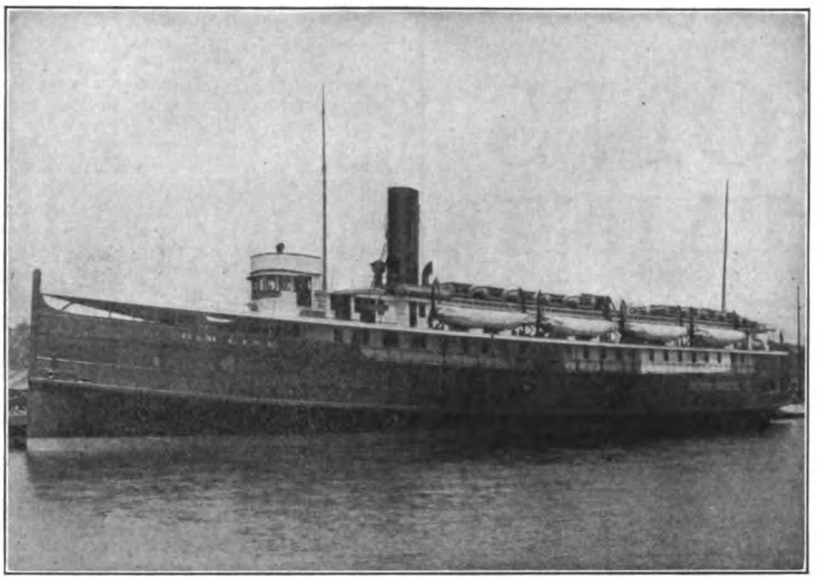

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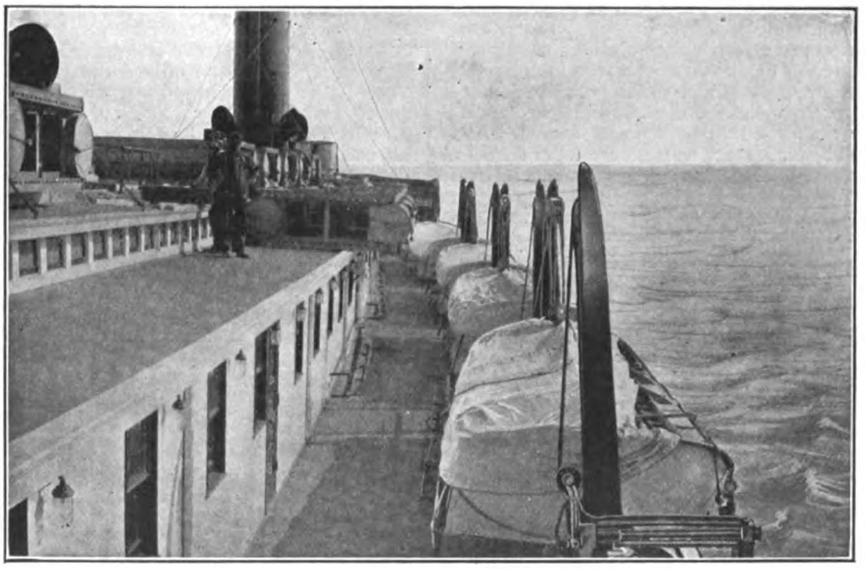

London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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Direct Connected Dynamos and Engines. This is the title of a handsome catalogue which has just been published by Engberg's Electric & Mechanical Works, 16 Vine street, St. Joseph, Mich. Send for a copy; it will prove valuable to anyone interested in direct connected generating sets or vertical type engines. This company's generators can be furnished in direct or alternating current.

Air at Any Pressure, from 5-inch water column to 125 pounds per square inch, is the title of one of the articles published in Catalogue F-46, just issued by the De Laval Steam Turbine Co., Trenton, N.J. It is stated in the catalogue that De Laval centrifugal blowers and compressors are characterized by correct design and the utilization of improvements and refinements gained by twenty years' experience in building high grade steam turbines. "Where very large quantities of air are to be delivered against low pressures, the De Laval speed reducing gear permits operating both turbine and fan at the best speeds respectively."

"The latest mechanical marvel" is the term applied to the Foster Water Pressure Regulator by the Foster Engineering Co., Newark, N. J. "Not one of the cheap or inferior appliances so common in the market, but a high grade positive pressure reducing valve, constructed along the lines of modern practice and in keeping with the high repute and advanced engineering skill of this company. Absolutely reliable, especially adapted for service in hotels, apartment houses, residences, offices and manufacturing buildings, water works plants, etc., where high (and at times variable) initial pressures are met with and where it is desirable to maintain a constant terminal pressure without regard to volume. The Foster New Class 'U' does the work—capable of reducing as high as 300 lbs. to a delivery of from 10 to 100 lbs. per square inch. Neat, compact, attractive in finish and design, entirely self contained, no outside levers, weights, dashpots or rigging of any kind. It is conceded among those who know and the many satisfied users, to be the most successful and mechanically perfect regulator ever offered for the service for which it is intended. Ready accessability to internal parts and their removal, ease of operation, minimum cost of repairs in due time, and positive reliability are insured. Can be installed in any position. We claim for this product simplicity, efficiency and durability. We recommend it to any engineer requiring a steady, even delivery pressure whether the delivery lines are open or closed."

Ward's wrought steel marine boilers, which are used by the United States Government, are described in a circular just issued by the Charles Ward Engineering Works, Charleston, W. Va. In these boilers the generating tubes are expanded, there are no other joints, no nipple connections and no staybolts. In addition to boilers, the Charles Ward Engineering Works makes marine engines and river steamers.

Steam Vessels on the Atlantic Coast is the title of a book which is being published by the Eads Johnson Publishing Company, 30 Church street, New York. It is the intention of the publisher to furnish complete and reliable information for shippers, owners, mariners, manufacturers and dealers in fact everybody connected with the shipping business. The book will give the names of owners and their addresses, when and where the ships were built, the gross and net tonnage, hull particulars, and engine and boiler particulars. The publisher promises that it will be ready for delivery on January 1, 1916. There will be a discount price to cash subscribers before December first.

The Wm. Powell Company, Cincinnati, Ohio. This well-known manufacturer of steam fittings and accessories has for many years issued at frequent intervals booklets which not only illustrate its goods and list its prices, but give details and particulars as well which are not generally found in catalogues, thus obviating the necessity of writing to the manufacturers for information. The latest in the series is entitled "The Powell appliances for automobiles, trucks, motor boats, gas, gasoline and oil engines." It is prepared with painstaking attention to details, and is not only complete and well arranged, but is of a conveneint size for handling and is clearly and distinctly printed on good paper. Among the lines enumerated are generator valves, gasoline strainers, priming cups, gasoline cocks, relief cocks, air cocks, hand air and oil pumps, multiple oilers, lubricators, oil cups, grease cups, whistles, whistle valves, brass fittings, unions, needle point valves, etc. A feature for which The Wm. Powell Company has long been noted is 'White Star' valves. The company is prepared at all times to furnish non-corrosive valves, cocks and fittings at special prices. The Wm. Powell Company solicits inquiries and has a competent engineering department constantly designing and working on special requirements. In addition to the appliances described in this booklet, the company manufactures a general line of valves and fittings for any industrial plant.

PACKINGS FOR THE MOST SEVERE CONDITIONS

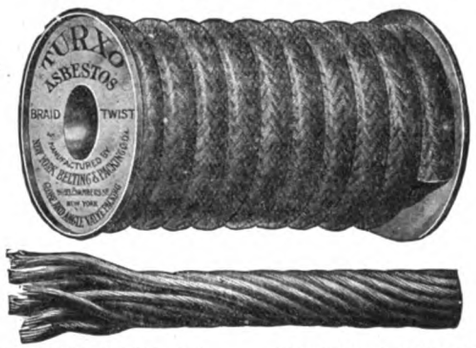
FIRO SUPERHEAT STEAM PACKING

CANNOT BLOW IT OUT

CANNOT BURN IT OUT

STYLE 1846

TURXO GLOBE AND ANGLE VALVE PACKING



TWISTED STYLE—251 BRAIDED STYLE—252

As a Valve Stem Packing, it is a Peer in its Class

NEW YORK BELTING AND PACKING CO.

NEW YORK, N. Y.—91-93 Chambers Street
CHICAGO, ILL.—124-126 West Lake Street
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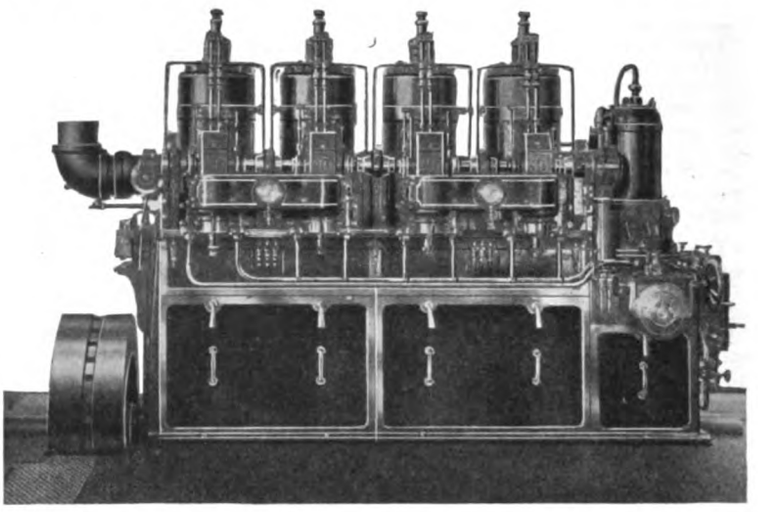
FROM STONE COLD TO FULL POWER IN 10 SECONDS

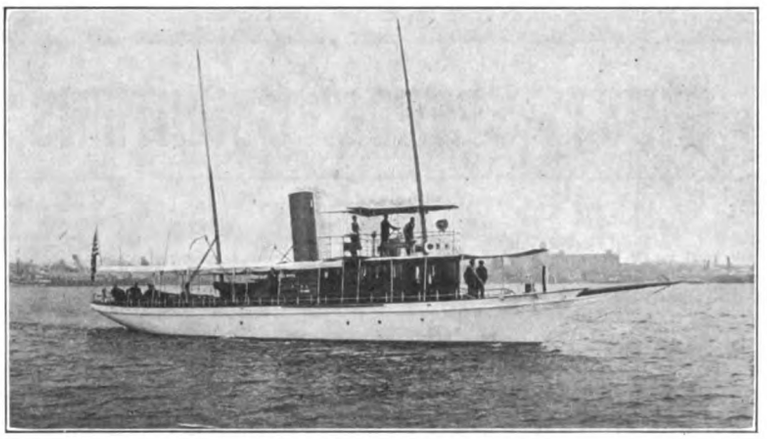
The time required in getting an engine from stone cold to full power is a considerable factor in producing maximum efficiency and economy.



THE SOUTHWARK-HARRIS VALVELESS OIL ENGINE

Can be made to produce FULL POWER in 10 seconds or less.

The Southwark-Harris Oil Engine has proved the most reliable of heavy oil engines. It is of the 2-cycle type, built in 2, 4, 6 or 8 cylinder units, with multi-stage vertical air compressors worked off the crank shaft. Entire control is by means of a single hand wheel which, through interlocking devices enables the engine to start on compressed air and gradually build up its operation on oil while still working on compressed air, or reverse from Full Speed Ahead to Full Speed Astern in five seconds. It can be started immediately with a load on or can be slowed down with equal certainty and greater ease than a steam engine of similar power.



The Yacht "SOUTHWARK"

Length 98 ft. Beam 16 ft. Draft 7 ft.
Equipped with Type 4 AM Southwark-Harris Engine.

The proof that a Southwark-Harris Valveless Oil Engine has made such a notable performance on the Yacht "Southwark" is the best possible recommendation for investigation on the part of vessel owners.

A 150 H.P. Engine installed in the Yacht "Southwark" has been in daily operation for several months around New York and Philadelphia. This Yacht in a recent trip from Philadelphia to New York, made the trip in 24 hours against a stiff North East wind and sea, and consumed but 169 gallons of Mexican Fuel Oil, at 2½ cents per gallon.

Actual Cost of Trip:

Fuel Oil,	**$4.22**
Lubricating Oil,	**0.93**
TOTAL COST,	**$5.15**

FOR SUBMARINES

We are now equipped and prepared to bid on submarine engines of the cross-head type, from 450 to 900 horse power.

SOUTHWARK FOUNDRY AND MACHINE COMPANY

430 Washington Avenue, Philadelphia

Old Colony Building, Chicago, Ill. **Brown-Marx Building, Birmingham, Ala.**

When writing to advertisers, please mention INTERNATIONAL MARINE ENGINEERING.

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Venus drawing pencils and Venus copying pencils are described by the American Lead Pencil Company, 206 Fifth avenue, New York, in a catalogue the company has just published. This is a booklet of 62 pages, handsomely printed in several colors. The company will send free samples of its pencils to any of our readers who mention INTERNATIONAL MARINE ENGINEERING.

Oil cups and grease cups are described in Booklet No. 523 which has just been issued by the Lunkenheimer Co., Cincinnati, Ohio. This company's oil cups are claimed to maintain the rate of feed to which they are set, until the reservoir is empty and no further attention is necessary other than filling. The improved regulating devices and filler caps with which these cups are equipped are said to have proved their reliability by years of satisfactory service. Lunkenheimer grease cups incorporate the same care in manufacture and the same high grade materials and workmanship as the oil cups.

Burmeister & Wain, engineers and shipbuilders, Copenhagen, Denmark, have issued a handsome catalogue profusely illustrated and printed in several colors. Messrs. Burmeister & Wain have built a great many successful motor vessels; among them, sixteen large sea-going vessels. The introduction to the catalogue reads in part as follows: "To Burmeister & Wain, Ltd., engineers and shipbuilders, the construction of motor vessels has been of the greatest importance. Previous to the building of these vessels the output was based upon the maintenance and repair of the Danish mercantile fleet and of vessels passing the Danish waters. Of new work only a limited quantity was taken in hand in order to keep the necessary staff of workmen and belonging workshops constantly employed, due consideration having to be taken to the fact that new work had to be executed without suitable profit owing to the keen competition in the home and especially the foreign market. This position, however, has been completely altered by the construction of motor vessels, the fact being that the fine and accurately executed motor machinery excludes the competition with cheap second class workmanship; it has thus been possible to create a lucrative new building activity which might be further developed and increased by enlargement of the yard. Building No. 300 is the sixteenth large seagoing motor vessel, which has been added to the fleet of motor liners built by Burmeister & Wain Ltd., during the few years which have passed since the mail ship "Selandia" started on her first voyage."

Thermometers for every purpose—especially for use on board ship, are made by the Taylor Instrument Companies, Rochester, N. Y. These thermometers are the subject of a handsome catalogue just issued, and a copy will be sent to any of our readers upon request.

Heavy crude oil engines for auxiliary sailing ships is the subject of a bulletin published by Bolinders Company, 30 Church street, New York. In order to answer the questions regarding the economy of this type of vessel, data from the actual experiences of an auxiliary sailing vessel fitted with a 120 horsepower Bolinder reversible crude oil engine are published in this bulletin. The vessel in question is a three-masted fore-and-aft schooner with a loading capacity of 370 tons. The vessel has been running for more than a year and for a period of 100 days the auxiliary engine has worked 700 hours. All of our readers interested in the subject should write for a copy of this bulletin.

Port Orford Cedar for Boat Building is the title of an illustrated circular published by the C. A. Smith Lumber Company, Oakland, Cal. This cedar is stated to be unequaled for any use where durability and wearing qualities under adverse conditions are required. The company claims that it has great strength, that it is easily worked, that it takes and holds paint, enamel, stain, or any kind of finish, and that it is impregnated with oil of cedar which acts as a preservative. After many severe tests, it has been adopted by the United States Government for pontoon and boat lumber, and it is also used by yacht and shipbuilders all over the world.

Slotting machines are described in illustrated Catalogue 49, just published by the Newton Machine Tool Works, Philadelphia, Pa. "We present herewith a complete line of our standard and special Slotters. The smaller sizes are crank driven, while the larger sizes are driven by screw, or by rack and pinion. Illustrations also show machines driven by belt, pneumatic clutch and reversible motor. We also illustrate on the inserts a few of our many different designs of milling, boring, drilling and cold saw cutting off machines. The development of high speed steel and adaptation of motor drive has necessitated the redesigning of these machines, and to this we have paid particular attention. As we are constantly bringing out new designs to meet the requirements of the different classes of work, we will be pleased to give you detailed information, weights and prices on application."

SHALLOW DRAFT RIVER BOATS

Will be the Subject of our November Number

This number will contain several articles on river navigation in different parts of the world, and there will be from fifteen to twenty illustrated descriptions of river boats, designed and built by the leading builders of the world, showing how the requirements of shallow draft navigation have been met on the Mississippi Valley, on Alaskan rivers, on the Nile, in Germany, Great Britain, South America and elsewhere.

Here will be described the latest and best river boat practice, making this issue of the magazine a valuable contribution to the literature of river navigation.

There will be No Increase in Our Advertising Rates

INTERNATIONAL MARINE ENGINEERING, 17 Battery Place, New York

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ANNOUNCEMENT

Werkspoor, of Amsterdam, Holland, beg to announce that twelve years' experience with Diesel engine building, combined with more extensive experience with marine steam engines, have enabled them to offer American shipowners, what is acknowledged to be the most successful ship's Diesel engine available to-day, at prices 30 to 40 per cent (according to the power) below the prices of American-built marine steam engines and boilers.

Werkspoor marine four-cycle Diesel type engines have certain characteristics, which differentiate them from all other designs. These characteristics are the outcome of efforts to meet the particular conditions of ocean-going work, and experience has shown that these are responsible for the splendid service which all Werkspoor customers, without exception, have obtained. Among these exclusive features may be mentioned the patent piston dismantling device.

Furthermore, the Werkspoor marine Diesel engine has nothing fantastical about its design or construction, and repairs may be made in any port in the world where steam machinery can be repaired. For its revolutions (about 120 P. M.) it is the lightest marine Diesel engine built, thus affording exceptional cargo space, the weight-saving being produced by the strong steel column construction. Twenty Werkspoor Diesel-engined ships are now in successful service. Investigation invited.

THOMAS LISLE,

(Associate Member Institute of Marine Engineers.)

Sole Representative in the U. S. A.

106 MORNINGSIDE DRIVE

NEW YORK, N. Y.

WERKSPOOR AMSTERDAM HOLLAND

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HELP AND SITUATION AND FOR SALE ADVERTISEMENTS

No advertisements accepted unless cash accompanies the order.

Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

Wanted, competent marine draftsman. Address, with references, to the Merrill-Stevens Ship Building Company, Jacksonville, Florida.

Chief draftsman, at present in charge of shipyard's machinery office, employing from 15 to 20 men, wants change. Technical graduate. Good experience; age 36. Address **Chief Draftsman,** care of INTERNATIONAL MARINE ENGINEERING.

Wanted: Complete sets of INTERNATIONAL MARINE ENGINEERING for the year 1910; or bound volumes of the year 1910 in good condition. Write to **International Marine Engineering,** stating price asked.

Sales Engineer wanted for marine work. An old established concern wants an experienced sales representative for the Atlantic Coast district, with headquarters in New York City. Product a necessity in every steamer. Price averages $150 to $400 per boiler. Sold on absolute guarantee. Don't answer unless you are well acquainted with the marine trade on the Atlantic Coast, and have experience with steam appliances. Correspondence held strictly confidential. Give full details of experience and references in first letter. Address **"Sales Engineer,"** care of INTERNATIONAL MARINE ENGINEERING.

Mechanical Engineer and practical hull constructor competent to take charge of engine or hull department would like to connect with ship or boat building firm desirous of building their own oil engines. I have invented and perfected a marine oil engine suitable for large and medium units. This engine is the outcome of twenty years of experimenting and is developed on different principles from those at present on the market. It starts and controls like a steam engine even as a single cylinder unit without special starting gear and with load on using the low grade fuels. Address **Box 75,** care of INTERNATIONAL MARINE ENGINEERING.

Experienced Shipyard Men Wanted

A foreman blacksmith who has had experience in large forgings, particularly marine.

A hull draftsman who is thoroughly trained and experienced.

A foreman boiler maker who can handle work and men and who preferably has had experience with Yarrow or other types of water tube boilers.

Address: **Experience,** care of
INTERNATIONAL MARINE ENGINEERING

Williams' "Agrippa" tool holders have been awarded the highest medal of honor at the Panama-Pacific International Expositions. They are made by J. H. Williams & Company, 63 Richards street, Brooklyn, N. Y.

Dixon's Silica Graphite Paint for marine use, such as for painting smoke-stacks, iron and steel hatches, steel masts, steel poles, etc., is described in Catalogue 75-B just published by the Joseph Dixon Crucible Company, Jersey City, N. J.

The Brunton Slope Chart is described by the Keuffel & Esser Company, Hoboken, N. J., in a circular the company has just published. This chart is made for the determination of the apparent angle of squares when cut at planes of varying degrees of divergence from the true dip, or vice versa.

Electric storage battery freight trucks for handling miscellaneous freight economically, are described in a catalogue published by the Sprague Electric Works, 527 West 34th St., New York. For these trucks the manufacturer claims low maintenance cost, simple mechanical construction and accessibility of all parts.

Engineering leaflets. The H. W. Johns-Manville Company, Madison avenue and 41st street, New York, is sending out a number of 8½ by 11 inch sheets containing items of interest to users of its products. Among the articles in some of these recent leaflets are, "How to Save You Coal," "When Iron is Worth More Than Gold", "Putting Off the Evil Day", "Asbestos—A Marvelous Mineral", "Making America Fireproof", etc.

Special tempered relieved staybolt taps, made by W. L. Brubaker & Bros., 50 Church St., New York, are the subject of an illustrated circular which has just been published. In this circular the statement is made that twenty-five actual tests made by railroads during the past year have shownsuch uniform results that the manufacturer positively guarantees its staybolt taps "to tap 20 percent more holes per tap than any other taps you have ever used."

High speed steel tool, and special alloy steels are described in a 56-page, cloth bound booklet published by the International High Speed Steel Company, 99 Nassau street, New York. "Research and investigation by the company's staff of competent, practical and skilled steel-makers, and its experienced chemists, mechanical, and metallurgical engineers, demonstrated conclusively that the best quality and highest grades of all descriptions of steel dealt in by the company can be more satisfactorily made in America, than in any foreign country, and it was accordingly decided to erect a modern and complete steel manufacturing plant in the United States."

Motion pictures, showing "National" pipe from ore to the finished product, are the subject of an illustrated bulletin which has just been issued by the National Tube Company, Frick Building, Pittsburg, Pa. "It is not possible for every one interested in pipe or tubing, directly or indirectly, to visit a pipe mill—and even if it were, they would obtain, perhaps, only a limited idea of a few of the processes involved in the making of pipe. Realizing the lack of facilities afforded, and the advantage to the consumer of knowing more about the manufacture of modern welded pipe, National Tube Company has had prepared a series of three motion picture films, showing the various processes employed in manufacturing National pipe from iron ore to finished product. To one not at all familiar with the technical elements of these operations, much in these views would be lost without a few preliminary words of explanation. It is therefore recommended that these descriptive notes be read before the pictures are seen." The bulletin describes each reel fully.

At Your Finger Tips—
All the Mercantile Steam Vessels on the Atlantic Coast

Owners and Addresses.
When and where built.
Gross and net tonnage.
Hull particulars.
Eng. and Boiler particulars.

JOHNSON'S
STEAM VESSELS OF THE ATLANTIC COAST

Complete and reliable information for shippers, owners, mariners, manufacturers, dealers—everybody connected with the shipping business.

EADS JOHNSON PUBLISHING COMPANY
30 Church Street NEW YORK CITY

Discount price to cash subscribers before Dec. 1st, 1915.
Ready for delivery Jan. 1st, 1916. *USE COUPON*

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Cranes and Hoists are described by Alfred Box & Co., Philadelphia, Pa., in a catalogue the company has recently published. These are made for every service—hand power or electric— D. C. and A. C. Alfred Box & Co. also make track systems and trolleys.

A test of a Talbot boiler of the type recently delivered for one of the battleship Arizona's fifty-foot cutters was made at Olean, N. Y. on September 3d, and is described in Bulletin A, which has just been issued by the Talbot Boiler Company, 120 Liberty street, New York. Anyone who is interested in the subject of boiler efficiency should send for a copy of this report.

Electric service on board ship is the subject of Bulletin 4926, published by the General Electric Company, Schenectady, N.Y. Among the electric devices manufactured by the General Electric Company are the following: Edison Mazda Lamps, in all sizes, are especially adapted for lighting any part of the boat. G-E electric fans and electric stateroom heaters provide comforts. The G-E marine searchlight increases the scenic advantages as well as the safety at night. Electric cooking and heating devices of all kinds can be operated at a cost incomparable with the convenience and simplicity. Power motors for the windlass, pumps, etc., can be located conveniently and operated by the turn of a switch. The source of power most economical and convenient for yachts and motor boats is the G-E gasolene engine generator—a thoroughly reliable direct-connected unit which operates successfully with minimum attention. For vessels having steam, the G-E steam engine generator or turbine may be used.

Electric winches and winding drums are described in Bulletin 48901, just issued by the Sprague Electric Works, 529 West Thirty-fourth street, New York. "These machines are designed for all kinds of hauling, usually in a horizontal direction, and at comparatively slow speeds. One of the most frequent uses is for pulling cars. All manufacturers having sidings need to move cars, and sometimes it is even necessary to switch them. The pinch-bar method is slow, and on curves or slight grades it fails entirely. The service of a switch engine is expensive, and the engine is not always available. The self-contained, weather-proof winch solves the problem, because it may be located at a convenient point, and either by direct pull, or with the aid of a snatch-block, it can move the cars when and where desired. This machine has also been used with great success for helping teams up grades, for pulling heavy trucks into and out of shops, in drawing heavy articles on and off drays, in warping vessels through drawbridges and along docks, or for dragging heavy material along the ground in stone quarries, lumber yards, ship yards, etc."

The Pneumercator is described in a catalogue published by the Pneumercator Company, 118 Liberty street, New York. "The Pneumercator is a new, scientific, practical and accurate apparatus, which registers the depth, height or volume of any liquid or semi-liquid that will seek its own level. It is made in various types, of which Models D-1 and T-1 are here described. Model D-1 is guaranteed to measure the forward and aft draft of a vessel to within 1 inch and to register the mean draft and the corresponding tonnage displacement to the same degree of accuracy, in either salt or fresh water, or interchangeably. It also shows the trim and list of the vessel under all conditions. It weighs and measures bulk cargoes, such as coal, ore, grain, lumber, molasses, oil, etc. It also weighs and measures bunkers of either coal or oil and will at the same time give a check on the consumption of same. This model is also of the greatest value as a navigating instrument, as the trim and draft of the vessel can be ascertained at all times. In case of accident, due to collision or grounding, the pneumercator will instantly give warning if the ship is leaking badly, and after the pumps are started will also show whether they are controlling the leak or not. Model T-1 measures and indicates the depth, height and volume of any liquid or semi-liquid in tanks, reservoirs, dry docks, etc., its uses in such work being practically unlimited. The instrument may be placed anywhere."

ASHTON Pop Safety Valves The Quality Standard

ASHTON Steam Gages The Accuracy Standard

No. 16 Style Marine Valve

THE ASHTON VALVE CO., BOSTON, U. S. A.
New York St. John's House, London, Eng. Chicago

ROSS SCHOFIELD BOILER CIRCULATORS
OVER 3,000,000 HORSE-POWER INSTALLED OR ON ORDER
ROSS SCHOFIELD COMPANY
17 BATTERY PLACE NEW YORK CITY

CEDERVALL'S PATENT
Protective and Lubricating Boxes
FOR PROPELLER SHAFTS
Are fitted to more than 3,000 Steamers,
with shafts ranging between 1¾ in. and 20⅝ in. in diameter.
Our system insures maximum safety of propeller shafts, as these are running in oil, consequently no corrosion. . . . . .
The costly liners on shafts may therefore be dispensed with as being absolutely superfluous. . . . . .
FRICTION MINIMISED
Consequently
—POWER SAVED.—
Old Stern Tube Arrangements can be altered for application of this Lubricating Box at a very Nominal Cost. . .
MAKERS:
F. R. CEDERVALL & SÖNER,
GOTHENBURG, SWEDEN.
AGENTS—*England, East Coast:* Jos. Johnson, Newcastle-on-Tyne. *England, West Coast:* Maxton & Sinclair, Liverpool. *Scotland and Ireland:* John G. Kincaid & Co., Ltd., Greenock. *Norway:* I. von der Lippe, Christiania; C. Dahm, Bergen; Olaf Berg, Stavanger. *Netherlands and its Colonies:* N. V. Soerabayasche Machinenhandel. v/h Becker & Co., The Hague. *Italy:* Dott. Attilio Panzano, Genova. *U.S.A., West Coast:* Louis Wilhelmson, United Engineering Works, San Francisco, Alameda and Oakland.

REG'D TRADE MARK
HOLZAPFELS
COMPOSITIONS FOR IRON AND STEEL VESSELS' BOTTOMS
In use and in stock at all ports of the world. Over 18,000,000 gross tons of shipping coated annually
Proprietors of INTERNATIONAL COMPOSITION, ANTICORROSIVE, and ANTIFOULING
HOLZAPFELS AMERICAN COMPOSITIONS CO., Offices, Welles Bldg., 18 Broadway, N. Y.
HOLZAPFELS, LTD., Milburn House, Newcastle-on-Tyne, England.

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Where reliability reigns supreme. "What would happen," asks the American Blower Company, Detroit, Mich., "if the air supply of a submarine were suddenly cut off, due to a faulty fan?" In Bulletin No. 1015 just publishd, the American Blower Company states that its "Sirocco" multi-blade fans and blowers and being used on submarines because of their absolute reliability to do their work and to do it in the most economical way. Almost every navy in the world, according to the American Blower Company, uses Sirocco fans for ventilation on submarines, torpedo boats and battleships of all kinds. The American Blower Company's engineering department will gladly co-operate with engineers in the selection of the proper size and arrangement of Sirocco fans for ship work.

BUSINESS NOTES

A Satisfactory marine engine and boiler. The Gas Engine & Power Company and Chas. L. Seabury & Company, Consolidated, Morris Heights, New York, recently furnished engine and boiler outfits for two steamers belonging to the Kitsap Transportation Company, Seattle, Wash. Mr. W. L. Gazzam, president of the transportation company, writes the Gas Engine & Power Company as follows: "Your favor of the 13th inst. has my attention and I beg to advise you that the Seabury engine and boiler outfits placed in the Steamers Hyak and Kitsap have proved very satisfactory. As you are aware the first cost of these engines and boilers was higher than that of other competing makes, but we believe that they were much cheaper in the long run, as our experience is that repairs on other makes have made Seabury engines and boilers much the cheapest."

High Awards granted the Lunkenheimer Company at the Panama-Pacific International and Panama-California Expositions. The medal of honor has been granted The Lunkenheimer Company, Cincinnati, Ohio, at the Panama-Pacific Internatioal Exposition, and the grand prize at the Panama-California Exposition. The exceptionally large and complete line of engineering appliances exhibited at the expositions covers in great variety bronze, iron, "puddled" semi-steel and cast steel globe, angle, cross, check, gate, balanced throttle and non-return safety boiler stop valves; also bronze and iron pop safety, relief and blow-off valves; water columns and gauges; whistles, ground key work, injectors and ejectors; bronze fittings and unions; cylinder lubricators, oiling devices, oil and grease cups; automobile and motor boat specialties, etc. The Lunkenheimer Company writes International Marine Engineering that it feels that the truth of the statement it has always made—that of being manufacturer of only goods of the highest quality"—has been fully corroborated by the decision of the juries of awards in granting the prizes.

Vessels Equipped with France Metallic Packing. The France Packing Company, Tacony, Philadelphia, Pa., sends us the following partial list of merchant vessels equipped with its packing, giving the number of sets in each vessel:

SEATTLE.

Alameda	5	Indianapolis	5
Cordova	7	Sol-Duc	1
Tacoma	11	Sioux	2
Chippewa	7	Rosalie	4
Iroquois	1	Comanche	6
Puget	2	Burton	2
Minnesota	6	Reliance	2
Independent	2	Camano	3
Humbolt	4	Florence K	1
Watson	1	Starr	5
Tampico	1	Northland	1
Hyak	2		

SAN FRANCISCO.

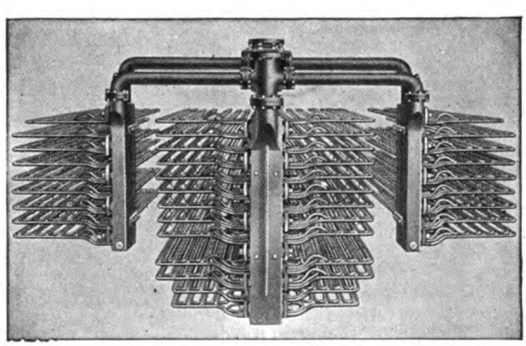
Hyades	1	Rochelle	4
St. Helens	3	Navajo	6
Phoenix	2	Princess Adelaide, C. P. R.,	
Necanium	6	Vancouver	1
San-Ramon	6		

Princess, Charlottstown, S. N. Co	4
Empress, Prince Edw. Island, Canada	9
Gulfoil, Guffey Refining Co	8
Ligoneir, Guffey Refining Co	6
Larimer, Guffey Refining Co	15
F. X. Droxlet, Quebec, Canada	20
Virginia, Baltimore Steam Packet Co	2
Florida, Baltimore Steam Packet Co	2
Raleigh, Baltimore Steam Packet Co	2

FIRE TUBE MARINE SUPERHEATER

EIGHT REASONS WHY:

1. It is adaptable to either new or existing boilers of the fire tube type and can be applied with no change in design or construction.
2. It renders possible increase in output of boiler horse power from a given boiler plant, 10% to 20%.
3. It will produce the same power output with fewer boilers.
4. It reduces the size of the bunkers, thereby reducing the draft of the vessel with a given cargo or making possible an increase in revenue cargo.



5. It results in a saving of fuel over saturated plants, both operating under the same draft conditions, of 10% to 20%.
6. It reduces the maintenance costs by the prevention of water hammer, leaky flanges and condensation in the cylinders.
7. It does not prevent rapid, thorough and frequent cleaning of the tubes.
8. Its construction provides easy access to all screwed joints and the easy removal of the parts.

LOCOMOTIVE SUPERHEATER CO.

30 Church St., New York, N.Y. **People's Gas Bldg., Chicago, Ill.**

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Davenport	6	Chelohsin, Vancouver	2
Oliver J. Olson	6	City of Angeles	6
Lyra	1	Vanguard	6
Northland	6		

STEAM YACHTS.

Viking, N. Y. Y. C	4	Alicia, Wilmington, Del	6
Vitese, N. Y. Y. C	3	Felicia, N. Y. Y. C	3
Freelance, New York	4	American, New York	18
Haouli, New York	15	Kanawha, New York	8
Turbese, New York	3	Vergana, New York	4
Kitsot, New York	3	Sovereign, New York	4

TUGS.

Piedmont, Baltimore	2
G. R. Murray, Philadelphia	3
Hugo Keller, Westerly, R. I	2
Genessee, Westerly, R. I	3
Annie L. Wilson, Westerly, R. I	1
Rosoline, Westerly, R. I	2
Westover, Philadelphia	1
Summer Smith, Philadelphia	4
Minerva, Philadelphia	5
New Castle, Philadelphia	1
Wm. Schauble, Sayreville, N. J	2
Dougherty Tow Boat Co., Baltimore	3
Southern Towing Co., 4 tugs, Baltimore	8
E. L. Russell, Guffey Petroleum Co	4
Neptune, Curtis Bro. Towing Co	6
Taylor Brothers, Washington, D. C., "Yerkes"	5

T. T. Crosby, Seattle	2	Tatoosh	1
Goliah	1	Wyadda	1
Lumberman	2	Argo	2
Yellowjacket	1	Defender	2
Active	1	Ruth	3
Wallola	1	P. F. Kelley	1
Oregon	3	Forester, Aberdeen	1
John Cudahy, Aberdeen	2	Champion, Aberdeen	2
R. C. Veit, Galveston	6		

STEAM WHALERS.

Kodiak, Seattle	2	Unimak, Seattle	2
Aberdeen, Aberdeen	2	Westport, Aberdeen	2
Moran, Aberdeen	1	Paterson, Aberdeen	1
Paterson, Aberdeen	1		

SIDE WHEELERS.

West Seattle, Seattle, Wash	2	St. John, Portland, Ore	4

STERN WHEELERS.

Sarah Dickson	2	Henderson	4
Cascades	4	Shaver	6
Gamecock	2	Grahamona	2
Jesse Harkins	1	J. N. Teal	2

FIREBOATS.

Duwamish, Seattle, Wash	1
David Campbell, Portland, Ore	4
Edwin S. Stuart, Philadelphia	4
Chas. Clark, Galveston	1

A DIESEL ENGINE ANNOUNCEMENT.—Messrs. Werkspoor, Amsterdam, Holland, write INTERNATIONAL MARINE ENGINEERING as below: Mr. Thomas Lisle, 254 West 34th street, New York, is sole representative in New York. "We beg to announce that twelve years' experience with Diesel engine building, combined with more extensive experience with marine steam engines, have enabled us to offer American shipowners, what is acknowledged to be the most successful ship's Diesel engine available to-day, at prices 30 to 40 per cent (according to the power) below the prices of American-built marine steam engines and boilers. Werkspoor marine four-cycle Diesel type engines have certain characteristics, which differentiate them from all other designs. These characteristics are the outcome of efforts to meet the particular conditions of ocean-going work, and experience has shown that these are responsible for the splendid service which all Werkspoor customers, without exception, have obtained. Among these exclusive features may be mentioned the patent piston dismantling device. Furthermore, the Werkspoor marine Diesel engine has nothing fantastical about its design or construction, and may be repaired in any port in the world where steam machinery can be repaired. For its revolutions (about 120 P. M.) it is the lightest marine Diesel engine built, thus affording exceptional cargo space, the weight-saving being produced by the strong steel column construction. Twenty Werkspoor Diesel-engined ships are now in successful service. Investigation invited."

THE BRAIN OF THE SHIP

should be in the pilot house, not in the vessel's vitals.

When your ship is running through a fog and you want to cover a certain distance on a given course, you need an instrument that will tell you instantly and accurately how far you have gone.

CUMMINGS' ENGINE LOG

placed in the pilot house registers the exact distance travelled and eliminates any possibility of accident or loss of time.

Finished, nickel plate, battleship gray, and polished brass; size, 8" diam. by 4 5-16", wt. 10 lbs. Price, $200.

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Cummings Ship Instrument Works

110 High Street, Boston, U. S. A.

SAMSON

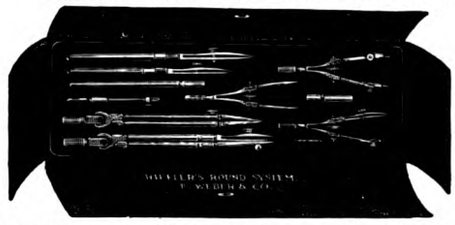
Solid Braided Cord. All sizes. For log lines, lead lines, halyards, tiller rope on motor boats, hand rails, etc.

Will not stretch, kink or ravel like twisted rope, and wears longer. All SAMSON Cord is guaranteed free from imperfections. Send for samples and catalogue.

SAMSON SPOT CORD

SAMSON CORDAGE WORKS, Boston, Mass.

DRAWING INSTRUMENTS



Genuine RIEFLER Round (Tubular) System

Built for service. All parts interchangeable. Standard line. Universally used and endorsed in Europe. Drawing instruments of all grades for professionals, schools and colleges. Repairing solicited. Catalogue sent on request.

F. Weber & Co., Philadelphia *Branch Houses:* **St. Louis Baltimore**

Second Hand Transits and Levels. First class condition, perfect adjustment, and bargains at their respective figures.

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DE LEIZER
TRADE MARK

Removes Oil From Water

Not PART of it—but ALL of it

Before it Enters the Boiler

LEITE is not a "boiler compound." Its use is outside the boiler. It is a crystalline mineral substance which was accidentally discovered to have a marvellous *affinity for oil* when in emulsion,—somewhat like the affinity of cement for water. It will seize every particle of oil in sight,—and once seized it never lets go. The only way to make it let go is to burn the oil off,—and this gives you your OLEITE back again practically as fresh as ever.

The function of the DEOLEIZER is not to take out 90% or 95% of the rough oil in the steam,—many devices do this,—but to take out the last minute fraction or trace of oil. This problem, as old as oil itself, and hitherto baffling, is now solved.

No engineer need be told what an absolutely deoleized return feedwater means in clearing his boilers of oil and scale.

Less coal; less cleaning; smaller repair bills; less insurance cost,—all this and more.

We install strictly on the basis of GUARANTEED results. The responsibility is ours. You keep the DEOLEIZER or the money, whichever you please. And we do not ask for the latter until you are satisfied with the former.

Moreover, we guarantee its annual cost *under contract.*

You may as well learn all the details today as to wait any longer. Therefore send for our Bulletins.

You can assist us greatly in our publicity work by refering to this advertisment as D-2. Our thanks in advance.

William Andrews, Inc.

120 Liberty Street New York

TRADE PUBLICATIONS

Cranes and Hoists are described by Alfred Box & Co., Philadelphia, Pa., in a catalogue the company has recently published. These are made for every service—hand power or electric— D. C. and A. C. Alfred Box & Co. also make track systems and trolleys.

"Many Valuable Advantages" of the oil engine made by The August Mietz Machine Works, 130 Mott street, New York, are interestingly described in Bulletin M-21, which the company has just issued. In this bulletin the statement is made, "Even in units of the largest size the M. & W. engine requires the attention of only one man, and that only a portion of the time. After getting under way he need never go near the engine until he gets a signal from the bridge, except to see that the lubricator reservoir is filled and the fuel tank supplied.

"Shaw Cranes for Shipyard Service." This is the title of a circular which has just been published by the Shaw Electric Crane Department of Manning, Maxwell & Moore, Inc., 119 West Fortieth street, New York. One of the illustrations in this catalogue shows two 10-ton Shaw cranes, span 120 feet, lift 95 feet, over ship ways at the yard of the Fire River Shipbuilding Corporation, Quincy, Mass. Overhead traveling cranes serve every part of the ship construction.

Centrifugal pumps for boiler feed are described in Catalogue E, which has just been published by the Alberger Pump & Condenser Company, 140 Cedar street, New York. This pump is driven by an Alberger-Curtis steam turbine. The casings of both the pump and the turbine are horizontally divided, with all openings in the lower parts. The impellers and diffusion rings are of bronze and the shaft is of steel, protected by bronze sleeves. The bearings are of the ring-oiling type, separated by stuffing-boxes from contact with the water being pumped.

In the September issue of *Plymouth Products,* published by the Plymouth Cordage Company, North Plymouth, Mass., a department has been started entitled "Questions Answered." One of the questions answered in the first number in which this department has been published, is "Does boiling manilla rope, in order to make it easier to handle, injure its durability or strength?" It is the purpose of the Plymouth Cordage Company to publish questions and answers of this nature in every future issue of *Plymouth Products.*

"A Few of the Boilers Using Eckliff Circulators" is the title of a pamphlet just published by the Eckliff Automatic Boiler Circulator Company, 46 Shelby street, Detroit, Mich. These "few" boilers include several ships in the United States navy, the United States army quartermaster's corps, Coast Guard Service, Lighthouse Bureau, Isthmian Canal Commission, and a long list of boilers on ships used by transportation and tugboat companies throughout the country.

"Pipe Covering Service" is the title of a folder published by the H. W. Johns-Manville Company, Madison avenue and Forty-first street, New York. In reference to pipe covering installation, the Johns-Manville Company states that you should be sure of three things when planning them. First, proper design of covering; second, good quality of covering; third, proper application of covering. In the catalogue mentioned, the Johns-Manville Company states that its service supplies these three conditions. "The service includes advisory work in planning the job; it includes the right covering of insured quality; and if you wish it includes the proper installation of the covering through the contract department and its branches."

Marine electrical equipment, electrical specialties and watertight fittings and fixtures are described in a fully-illustrated catalogue of 220 pages which has just been published by the Russell & Stoll Company, 48 Cliff street, New York. In the section devoted to marine lights, lanterns, etc., the following statement is made: "In this important and complete section no attempt has been made to compete with the cheaper grade of running lights, lanterns, reflectors, etc., found on the market. Appreciating the extremely severe conditions under which this material is used, and the quality demanded by the better class of marine service, we put into our product only the best grade of material and workmanship, which is demonstrated by its service and lasting durability. We are equipped to repair or make to order all styles of lights and lanterns, including those of foreign make, also running lights with polished French lenses, special lanterns, reflectors, or similar fixtures." Information and prices concerning complete marine electrical equipment may be found by reference to the catalogue.

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Hack-saws for every job are one of a large line of machinist's tools described in Catalogue 20-L, published by the L. S. Starrett Company, Athol, Mass. "A hack-saw that cuts iron pipe would not do satisfactory work in cutting sheet steel. Good machinists know this, and also know that there is a Starrett blade for every purpose—seventeen different blades—some differing in shape and size of fitting, some in composition and some in hardness."

A Drill Bulletin has just been published by the Keller Pneumatic Tool Company, Fond du Lac, Wis. Keller rotary pneumatic drils are described in this bulletin as follows: "Keller rotary type drills are well known as being powerful and durable. All delicate parts are eliminated in this style of portable pneumatic drill. The number of parts is very small as compared with piston drills, and the parts are less liable to wear out or get out of order, making reduced repair cost. The motor runs at a high speed; this means an economical gear reduction and a light-weight machine. There is absolutely no vibration when these tools are in operation, and they are, therefore, especially well adapted for reaming and tapping, besides being a steady tool for drilling and flue expanding. The material used in the drills is of the best grade of vanadium steel casting for the housing, drop-forging for the gears, phosphor bronze for the pistons and piston blades. The drill spindle runs in ball bearings, eliminating all unnecessary friction and giving the best efficiency for the least consumption of air."

Pneumatic riveting hammers are described in a bulletin which has just been published by the Keller Pneumatic Tool Company, Fond du Lac, Wis. "These hammers are made with cylinders, valve boxes and all parts exposed to wear, hardened and ground to a standard. The hardened cylinders will outwear soft ones four times to one. Valves are of simple construction and fit into one-piece valve boxes. Handles are made of drop-forged steel. Best materials are used throughout. Keller riveters are usually furnished for standard rivet sets, but are also made for rivet sets having 1⅜-inch shanks. In the use of these large shank sets the percentage of breakage is greatly reduced—in fact, practically eliminated. Keller riveting hammers are furnished with outside or inside throttle levers, but we also furnish them, when so specified, with 'safety trigger lock handles.' These handles are made so that the tool cannot be started accidentally. The operator must grip the handle in working position to start the tool when equipped with this kind of handle."

A "Chipper" Bulletin has just been published by the Keller Pneumatic Tool Company, Fond du Lac, Wis. "Keller pneumatic chipping hamers are made with differential pistons. The air is used only to deliver the blow, and the air that returns the piston is not exhausted. There is never any live air blowing out of the front of the tool. In the use of this construction a saving of nearly 50 percent in air consumption is affected. All working parts exposed to wear, including cylinders and valve boxes, are hardened and ground to a standard. The hardened cylinders will outlast soft ones four to one. The handles in these tools are made of drop-forged steel. All parts of the same size and style of tool are interchangeable. If simplicity of construction, good workmanship, economy in consumption of air, safety and ease in operation, count for anything, you will find them all combined in these tools. Keller chipping hammers are furnished with outside throttle levers, but we also furnish them, when so specified, with 'safety trigger lock handles.' These handles are made so that the tool cannot be started accidentally. The operator must grip the handle in working position to start the tool when equipped with this kind of handle."

The Chicago Pneumatic Tool Company, 1026 Fisher building, Chicago, Ill., is now distributing Bulletin No. 216, covering Hummer self-rotating type Hummer drills, which are made in three sizes, known as the A-66, B-66 and C-66 drills, suitable for drilling 6, 8 and 12-foot holes, respectively. "Among the important features which the manufacturer has incorporated in the drill, is that of the rotation of the steel being entirely independent of the hammer piston, eliminating the use of ratchet or pawl parts which is the common means used in other drills. This means a much more rapid drilling machine, as the piston is free to deliver the full force of its blow upon the drill steel without losing a part of its power through the necessity of rotating the steel as well. Another important feature of the Hummer drill is the valve, which consists of a standard commercial hardened steel ball ordinarily used for ball bearings. It is three-quarters of an inch in diameter and weighs a trifle over an ounce. Its travel between its seats in the valve chest is only one-eighth of an inch. It is perfect in its action, practically indestructible, and ideally simple as compared with other rock drill valve mechanism."

Starrett Hack Saws for Every Job

A hack saw that cuts iron pipe would not do satisfactory work in cutting sheet steel.

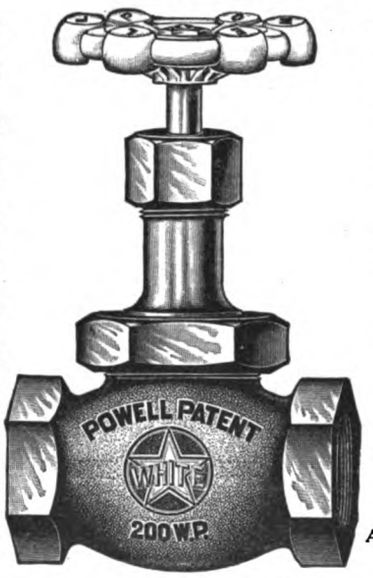
Good machinists know this and also know that there is a Starrett blade for every purpose. Seventeen different blades—some differ in shape and size of teeth—some in composition, some in hardness.

Send for free catalog No. 20-L. It tells what saw to use. Guided by this your work will be clean and rapid and your blades will have long life.

THE L. S. STARRETT CO.
ATHOL, MASS.
"The World's Greatest Tool Makers"
NEW YORK LONDON CHICAGO

POWELL VALVES

(Especially The "White Star" Valve)



We Manufacture a Complete Line of
GLOBE VALVES
ANGLE VALVES
CROSS VALVES
GATE VALVES
and
CHECK VALVES

Ask your dealer for "Powell" Valves--or write us.

ESTABLISHED IN 1846

THE WM POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES
CINCINNATI, O.

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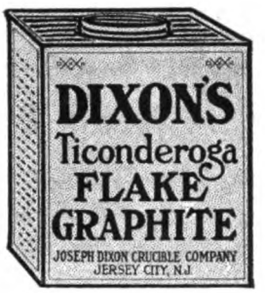
A Better Way to Lubricate



When the oil or plain grease film breaks, as it often does, do you just charge the damage caused by friction to profit and loss? A better way is to supplement oil and grease with

DIXON'S FLAKE GRAPHITE

Then when carelessness, neglect, poor or insufficient oil or plain grease fails to give the necessary protection, two wonderfully smooth and unctuous graphitized bearing surfaces eliminate friction and save wear and tear. Booklet No. 75-C tells how.

Made in Jersey City, N. J., by the

JOSEPH DIXON CRUCIBLE COMPANY

Established 1827. C-101

A test sheet, showing the performance of a Talbot boiler which has just been delivered to one of the picket boats of the battleship *Arizona,* is published by the Talbot Boiler Company, 120 Liberty street, New York, and should prove interesting reading to those who are concerned with the subject of boiler economy. The Talbot Boiler Company states that it "would be pleased to show you some things which are extremely interesting in relation with the repairability of the Talbot boiler. We will take some tubes out of this boiler under steaming conditions, the boiler having 300 pounds pressure. We mean by this we will take the tube out under full pressure without blowing the boiler down, and replace it with another tube. We will also let you take your pick of any tube you wish for us to remove under steaming conditions. This, in addition to the extreme efficiency, compactness and light weight of the boiler, makes it very interesting to all who have seen tests up to the present time. In addition to the names of the witnesses on the test sheet, we suggest that you talk with Mr. McFadden, of the Interocean Oil Company, who has seen tubes removed from the Talbot boiler under 300 pounds pressure. We would be pleased to take you over to the yard and show you the boiler undergoing tests if you will call us up."

"Economy" herringbone reduction gears are made by the Kerr Turbine Company, Wellsville, N. Y., and are illustrated and described in a catalogue just published. Twelve sets were recently completed by the Kerr Turbine Company for installation on the battleships *Idaho* and *Mississippi.*

"The Latest Fan for Forced Draft Used on Battleships and Destroyers of the United States Navy." This is the title of a circular which has just been issued by the B. F. Sturtevant Company, Hyde Park, Boston, Mass. In the circular the statement is made that "Turbovane fans have been especially developed for high-pressure forced draft work, such as usually obtains on board ship. These fans are designed primarily to operate at the economical speeds of Sturtevant turbines, and with this form of drive they form a combination that is absolutely unique in the field. In addition to this the Turbovane is patented."

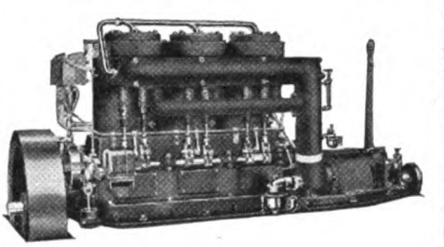
Bolinder's, manufacturer of crude oil engines, Stockholm, Sweden, whose representative in the United States is Bolinder's Company, 30 Church street, New York, has issued a 12 by 9 catalogue, the press work and illustrations of which are unusually good. The introduction to the catalogue reads in part as follows: "In issuing this publication, dealing specifically with the Bolinder crude oil engine for use as auxiliary power in sailing ships, we have endeavored by actual illustrations and a few outline particulars, to convey to present and future owners of sailing vessels, that a reliable crude oil two-stroke cycle engine proves a valuable asset to one's fleet. Whilst the initial outlay is under consideration, the savings during the life of the vessel should also be borne in mind, and in the majority of instances it will be found that with a medium-size sailing vessel the engine pays for itself in a very few voyages, and with larger vessels—those of 3,000 to 5,000 tons deadweight—frequently the expenses of towage, increased freights, reduced insurance, etc., etc., will pay for the engine in two round voyages. Any owner who will allow us to interest him in this proposition will be waited upon and provided with figures, etc., that we think will prove our statements. In years now past the sailing ship 'held the seas' for the simple reason that she had no competitor, but such is not the case now with the economical-running tramp steamer, with the result that where a ship continues to rely entirely upon wind for propulsion, the future is not particularly bright from a financial point of view. A new lease of life can be given to sailing craft by the installation of reliable two-stroke cycle engines using a cheap oil for fuel, as by such an installation the speed under normal conditions, that is, with sails set and engine under way, in some cases exceeds that of the tramp steamer, although it is usually not advisable to use the auxiliary power when there is a good wind. * * * * The success of the Bolinder engine, installed in thousands of craft of various kinds, need not be dealt with here, but a few words on the latest Bolinder crude oil engine of the 'M' type may be opportune. This engine, apart from the qualities which have made the Bolinder engine world-known, possesses certain distinctive features which place it on an entirely different standing compared with other internal-combustion engines. In the first place, no water injection is required, rendering all fresh water tanks for the motive power unnecessary. In eliminating the water injection, this has been done in an entirely different way from hitherto in the existing types of engines of similar pattern; it is carried out in such a scientific manner that the exhaust is both odorless and smokeless, with the natural consequence that the life of the wearing parts of the engine will be very considerably lengthened. Secondly, the space for the cargo is much increased. Thirdly, the amount of lubricating oil is much reduced. Apart from the above direct gains, there are a number of other superior qualities possessed by this type." These are discussed fully in the catalogue.

WOLVERINE *for* **MARINE SERVICE**

THE MOTOR WITH THE BORE *and* STROKE

FUELS { KEROSENE (PARAFFIN)
GASOLINE (PETROL)
DISTILLATE
SUCTION PRODUCER GAS

Write for Catalogue No. 73



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WELIN MARINE EQUIPMENT CO.

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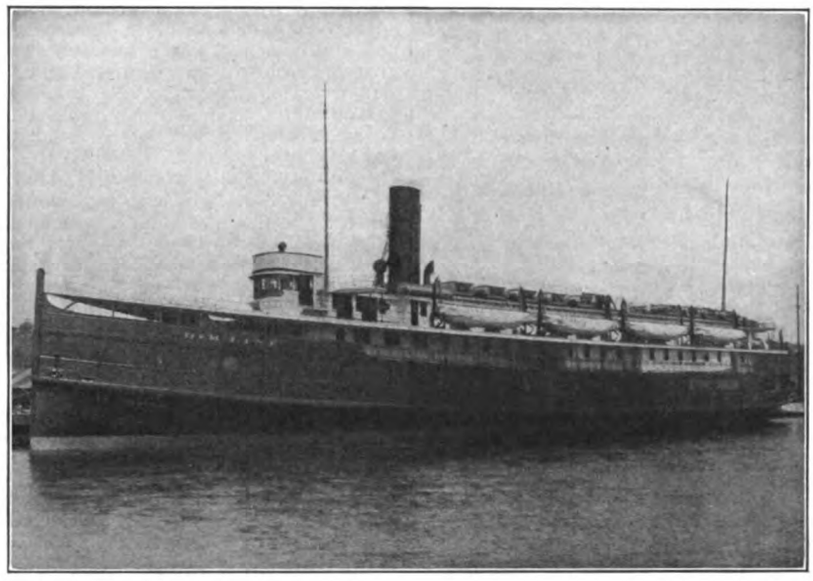

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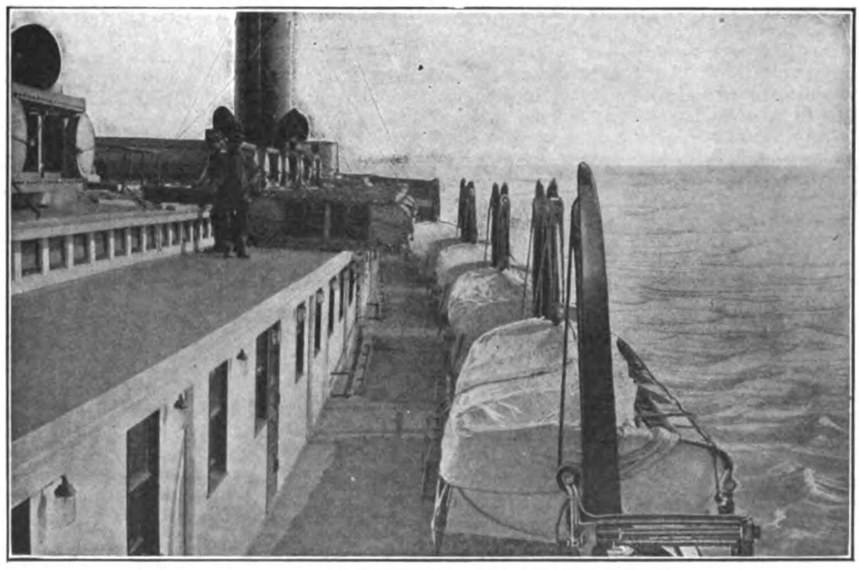
Supplied throughout with Lundin decked lifeboats under Welin quadrant davits. Also with our pontoon life rafts and A B C life preservers.

All this equipment will meet the latest U. S. Steamboat Inspection Requirements, and the laws adopted by the International Conference for safety at Sea held at London.



London House: Welin Davit & Engineering Co., Ltd., 5 Lloyds Avenue, London, E. C.

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The fire hazard on submarines is the subject of a circular published by the Pyrene Manufacturing Company, 52 Vanderbilt avenue, New York. "The fire hazard on submarines is one of the greatest risks of this type of vessel, and one that is fairly frequent. Heretofore it has been almost impossible to control a fire starting on one of these boats, and if the vessel was submerged, or a considerable distance from land, the danger of its total destruction became very great. The special fire hazards on submarines are danger of electrical short circuits, and fires started from oil, grease and waste in and around the engines. Until Pyrene was used there was no efficient hand-fire extinguishing appliance available to handle these outbreaks. The standard soda and acid extinguisher was absolutely useless, and dry powder machines were very unsatisfactory and unreliable, and if used entailed a tremendous expense and loss of time later on in cleaning up; and frequently the danger existed of putting the electrical equipment out of commission altogether. All submarines in the British navy carry Pyrene; the small boats have two extinguishers and the larger ones four extinguishers."

The monthly stock list for September, published by the Bourne-Fuller Company, Cleveland, Ohio, calls especial attention to the Scott crucible brands of tool steel. These are made in six tempers, as follows: A—Suitable for lathe and planer tools for cutting chilled iron, oil hardened steel and other hard material. This temper not made in grades lower than Scott's Extra; hardens at dark red. B—Best suited to lathe, planer and slotter tools, boring tools, corrugating tools, gravers' tools, drills, roll turning tools, all cold cutting dies and where high temper is required. Not made in grades lower than Scott's Extra; hardens at dark red. C—Best suited to milling cutters, small shear knives, taps, reamers, drills, brass working tools, twist drills, file cutters, cutting and trimming dies, edge tools generally, etc.; hardens at dark red. D—Best suited to shear knives, punches, miners' machine and hand drills, drop-forging dies, small chisels, etc.; hardens at medium red. E—Best suited to large cold chisels, track chisels, machinists' and blacksmiths' tools, stonecutters' tools, coal miners' tools, button sets, hammers, hot forging dies, welding to iron and steel, etc.; hardens at medium red. F—Best suited to bolt and rivet headers, flatters, fullers, all battering tools, heavy work generally, and where great toughness is required; hardens at full red.

Round dies in sets, with taps and wrenches, are among the great variety of engineers' and shipbuilders' tools described in a catalogue published by the Morse Twist Drill & Machine Company, New Bedford, Mass. These dies are made in a variety of threads and in a large range of sizes.

Messrs. Murphy, Stedman & Company, Ltd., 180 Gray's Inn Road, Holborn, London, W. C., have published a catalogue of "All-British Equipment." Messrs. Murphy, Stedman & Company are specialists in the complete equipment of foundries, machine shops and pattern shops. Among their large line of manufactures are air compressors; sand-blast machines; electrical cranes; oil-gas heating systems; core ovens and enameling stoves; heating lamps for shipbuilders, engineers, boiler men, etc.; mechanical hammers; machine tools of many types; wrenches; hack-saws; cutting pliers; oil engines; vertical and other boilers; valves of all types; pattern-making machinery; motor rollers; pipe-making machines; turbine pumps, etc.

"Prest-O-Lite Service" is the title of a bulletin published by the Prest-O-Lite Company, Inc., 818 Speedway, Indianapolis, Ind. "Don't follow wasteful, expensive and tedious methods—remember that 'wherever two pieces of metal are to be joined, you will find a profitable use for Prest-O-Lite Oxy-Acetylene Welding.' Investigate the savings you can make in metal manufacturing construction and repair work. Other manufacturers, garage and shop owners are getting the benefits in economy, efficiency and quality that only this process can give. Are you? Cost of equipment needed is low. Operation is simple and easily learned. Often just one repair made 'on the spot' more than pays for all necessary apparatus. We furnish a thoroughly high-grade welding apparatus for $60, not including acetylene cylinders, which are extra, and are furnished under a liberal service plan. Truck and special cutting equipment at extra cost. Prest-O-Lite acetylene service is perpermanent and universal, furnishes the highest grade of dissolved acetylene in portable cylinders and is used as conveniently as you used cylinders of oxygen. Saves the large initial outlay and heavy depreciation, trouble and inconvenience of making crude acetylene in carbide generators. Besides, Pres-O-Lite dissolved acetylene is perfectly dried, cleaned and purified—makes better welds and is cheaper to use. If you use acetylene for any purpose, you should have full details of this unparalleled service."

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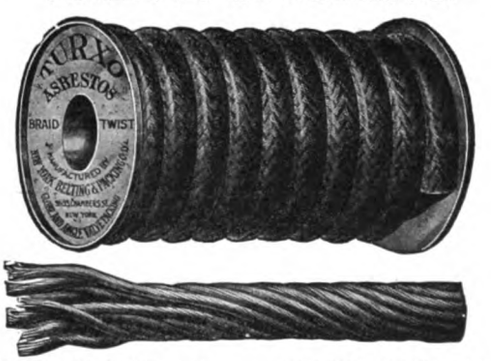

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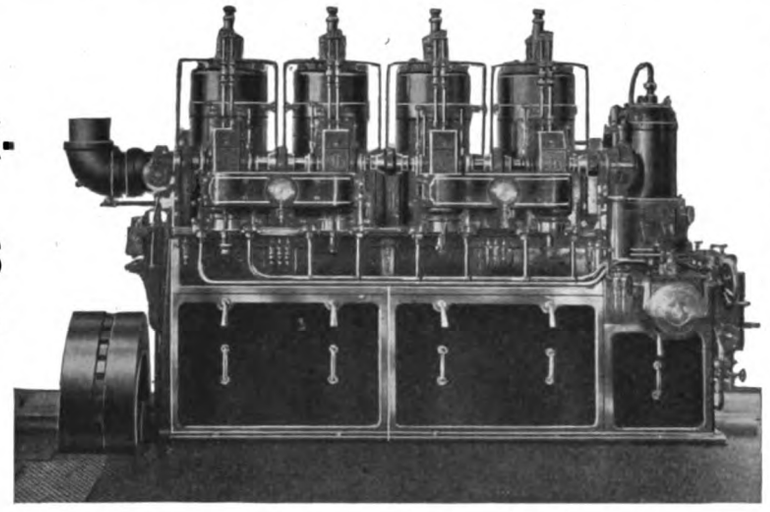
FROM STONE COLD TO FULL POWER IN 10 SECONDS

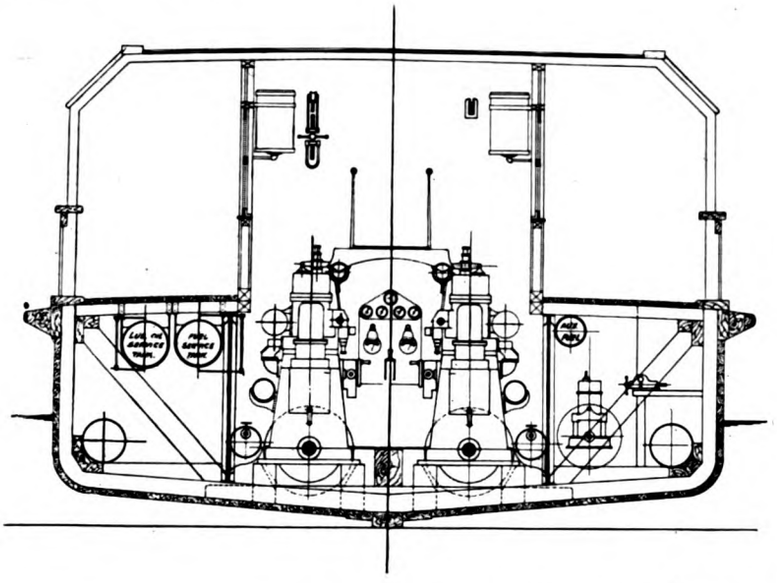
THE SOUTHWARK-HARRIS VALVELESS OIL ENGINE

DIESEL PRINCIPLE



An Eminent European engineer, an authority on Diesel engines, after a recent inspection of this engine, summed up his remarks by saying that the **Southwark-Harris Engine** is a "Simplified Diesel."

The **Southwark-Harris Valveless Engine** is especially well adapted for shallow draft vessels and barges, which usually are operated on tortuous and narrow rivers, because it is directly reversible—it has been put from "Full Ahead" to "Full Astern" in two seconds, and can be slowed down like a steam engine. Entire control is by means of a single hand-wheel.



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FOR SUBMARINES

We are prepared to furnish directly reversible crosshead type submarine engines from 450 to 900 horsepower.

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Old Colony Building, Chicago, Ill. **Brown-Marx Building, Birmingham, Ala.**

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"Inland" basic open-hearth steel for boiler plates and rivets, tank plates, sheets, angles, etc., is the subject of a catalogue published by the Inland Steel Company, First National Bank building, Chicago, Ill.

"Marine Installations" is the title of a new list of users of Brunswick ice machines, just issued by the Brunswick Refrigerating Company, Marine Department, New Brunswick, N. J. This list will be gladly sent on application to all interested. Marine refrigeration is to-day a very important item, and unless properly attended to will cause the expenditure of a great deal of money each year. A Brunswick marine refrigerating and ice-making plant is said to pay for itself in almost every case in less than a year. The cost of operation is small.

"Complete Electrical Equipment for Crane Operation" is the title of a bulletin just published by the General Electric Company, Schenectady, N. Y. "C-E engineers have studied crane requirements and designed electrical apparatus to meet known operating conditions. Every requirement for stopping or starting and the entire operating cycle is fully met by specially designed apparatus. Inter-pole motors, capable of standing heavy overloads, are manufactured in any speed or horsepower needed. These motors have split frames and large handholes for accessibility, and can be disassembled without disturbing back gearing. G-E crane motors are furnished with automatic solenoid brakes which work without jar or shock and make automatic compensation for brake-shoe wear. Brake-shoes made of metallized asbestos compound give a high coefficient of friction with but little wear. The cast iron grid rheostats used for crane equipment are well insulated from grounding in two places at each point of grid suspension. Each thin leaf can be bent double or twisted through 180 degrees—so ample elasticity is assured to withstand all shocks in crane operation. Protective devices are furnished in small panel units, which can be attached in any convenient place. A push knob on master panel opens line in an emergency and overload protection is afforded at all times. Horizontal or vertical handle controllers are furnished, which are absolutely reliable and very accessible. They are equipped with magnetic blow-outs, arc chute protecting covers and many refinements which twenty years of controller building suggested. Your inquiry for complete electrical crane equipment is solicited."

"Bitusol" paint for protecting bridges, piers, viaducts, ships and similar iron and steel work, is described in a catalogue published by Geo. M. Callender & Company, Ltd., 25 Victoria street, London, S. W. This paint is claimed to remain tough and elastic under all conditions of expansion and contraction, and therefore to be the best for all structural iron and steel work.

Anyone interested in rope should write to the Columbian Rope Company, Auburn, N. Y., and ask for a copy of the September issue of *Salesman-Ship*, which contains an article called "The Story of Hemp," giving the history of the cultivation of hemp from the earliest times down to the present. According to this circular, Chinese records show that in the 28th Century B. C., the Emperor Shen Nung first taught the people of China to cultivate hemp. Considering the thousands of years that hemp has been used for making rope it is no wonder that the modern product is highly efficient.

Wattmeters are described in Bulletin 2002, which has just been published by the Weston Electrical Instrument Company, Newark, N. J. These instruments are said by the manufacturer to represent the latest development in electrodynamometer wattmeters, and to embody many characteristics hitherto considered unobtainable in instruments of this class. "For measurements in circuits where the power factor is very low, such as core losses in transformers, a special line of Weston wattmeters has been designed, giving full scale deflection for 20 percent power factor; that is, the scale value in watts is 20 percent of the number of volt amperes applied. These instruments are made in double ranges for both current and voltage, having maximum current ranges of from 1 and 0.5 amperes to 100 and 50 amperes. All wattmeters of this type, except the 1 and 0.5 ampere, are compensated for the power consumed in their potential circuits. A switch is provided by which the instrument may be used with or without this compensation, as the conditions of test require. On account of the severe conditions to be overcome in the design of such an instrument, the current required in the potential circuit is somewhat greater than in the regular model, and, therefore the instrument is not exactly compensated for temperature. The error due to temperature is, however, very small and can be corrected by reference to the certificate accompanying each instrument. The scales are uniform and the instruments have otherwise the same general characteristics as the regular model."

The Latest Fan for Forced Draft

Used on Battleships and Destroyers of U. S. Navy

Turbovane Fan Wheel.

Sturtevant
(REG. U. S. PAT. OFF.)

Turbovane Fans

have been especially developed for high pressure forced draft work such as usually obtains on board ship.

These fans are designed primarily to operate at the economical speeds of Sturtevant Turbines and with this form of drive they form a combination that is absolutely unique in the field. In addition to this the Turbovane Fan is patented.

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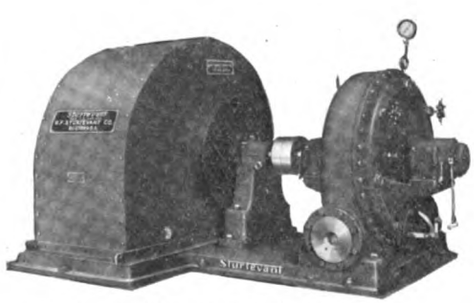

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HYDE PARK, BOSTON, MASS.
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Advertising gives the prospective purchaser a chance to weigh the merits and relative values of a number of like products. No longer does he yield to the insistent persuasion of the salesman alone.

The message of advertising is authoritative—all-compelling, and if the product lives up to its description, it reduces by half the selling costs.

☛ To-day there is more activity in the marine field than ever before in the history of the country—and even the most conservative admit the likelihood of considerably greater activity for the future. This is an unprecedented opportunity for you.

Greater sales of your particular product can be made at lower selling costs. Let us show you how. A detailed campaign will be worked out subject to your approval—no obligation.

SERVICE DEPARTMENT

INTERNATIONAL MARINE ENGINEERING

17 BATTERY PLACE NEW YORK CITY

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Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

For Sale—Brunswick refrigeration machinery, 12 tons capacity; Ammonia Type; investigate before buying elesewhere. *Willamette Iron & Steel Works,* Portland, Ore.

Wanted: Complete sets of INTERNATIONAL MARINE ENGINEERING for the year 1910; or bound volumes of the year 1910 in good condition. Write to **International Marine Engineering,** stating price asked.

Mechanical Engineer and practical hull constructor competent to take charge of engine or hull department would like to connect with ship or boat building firm desirous of building their own oil engines. I have invented and perfected a marine oil engine suitable for large and medium units. This engine is the outcome of twenty years of experimenting and is developed on different principles from those at present on the market. It starts and controls like a steam engine even as a single cylinder unit without special starting gear and with load on using the low grade fuels. Address **Box 75,** care of INTERNATIONAL MARINE ENGINEERING.

WANTED

Man having acquaintance among shipyards in the East and on the Great Lakes, as salesman for acetylene apparatus. Give qualifications and salary expectations. Address *Acetylene,* care of INTERNATIONAL MARINE ENGINEERING.

Experienced Shipyard Men Wanted

A foreman blacksmith who has had experience in large forgings, particularly marine.

A hull draftsman who is thoroughly trained and experienced.

A foreman boiler maker who can handle work and men and who preferably has had experience with Yarrow or other types of water tube boilers.

Address: **Experience,** care of
INTERNATIONAL MARINE ENGINEERING

A new four-cylinder Diesel engine is described in a circular just issued by the New London Ship & Engine Company, Groton, Conn. This engine is made in sizes from 60 to 2,500 horsepower. "Nlseco" engines are used by the United States and foreign governments in submarines and other naval vessels, and the manufacturer states that hundreds of horsepower are in daily operation in commercial and pleasure craft.

BUSINESS NOTES

THE GOLD MEDAL for portable and sectional elevating and conveying machinery has been awarded by the Panama-Pacific International Exposition to the Brown Portable Elevator Company, Chicago, Ill.

THE GEORGE A. BOYDEN PUMP COMPANY has been organized in Baltimore, Md., with a capitalization of $1,800,000. While the company has not yet announced the location of the site of its projected plant, it is understood that a tract of 18 acres in the northwestern portion of Baltimore will be either purchased or leased.

THE HYDRAULIC PRESS MANUFACTURING COMPANY, Mt. Gilead, Ohio, has been awarded two prizes by the International Jury of Awards at the Panama-Pacific International Expositions. These are as follows: The Grand Prize from the Department of Agriculture for press machines, and the Gold Medal from the Department of Machinery for forcing and bending presses and equipment.

CONSUL F. S. S. JOHNSON, Kingston, Ontario, Can., writes INTERNATIONAL MARINE ENGINEERING that in response to his request for American catalogues some months ago, fewer than fifty have been received, whereas it was hoped to obtain as many as 500. Mr. Johnson states that American manufacturers should realize that the present is an exceptionally good time for the extension of their trade abroad, and that it is most desirable for them to co-operate with American Consuls in Canada and other countries.

RECENT SALES of the Marine Department of the Brunswick Refrigerating Company, New Brunswick, N. J., include orders from the Fore River Shipbuilding Corporation for two 2-ton plants for the steamer which they are building for the Cuba Distilling Company, and two 1-ton plants for each of the tankers recently ordered by the Texas Company. From Wm. Cramp & Sons the following orders have been received: For W. R. Grace & Company's steamer *Santa Barbara,* now being built, two 4-ton machines, and one 2-ton machine for each of the three tankers, one for the Petroleum Transport Company and two for the Sun Company. Through Harlan & Hollingsworth an order for a 2-ton plant for the Petroleum Transport Company; through the Great Lakes Engineering Works, an order for a 1-ton plant for the Carona Coal & Fuel Company; from the Prince Line orders for the steamship *Tuscan Prince,* and steamship *Belgian Prince;* from the Standard Transportation Company, an order for a 2-ton plant for the steamship *Vesta;* from W. R. Grace & Company, two 1-ton compressors for the steamship *Curaca;* from the Isthmian Steamship Company, orders for equipping the steamers *Kentra* and *Charlton Hall* with 2-ton plants. The Brunswick Refrigerating Company will be very glad to have one of their engineers call upon anyone interested in refrigeration and quote them prices on refrigerating plants, and go into details with regard to the cost of operation, without expense.

At Your Finger Tips—
All the Mercantile Steam Vessels on the Atlantic Coast

Owners and Addresses.
When and where built.
Gross and net tonnage.
Hull particulars.
Eng. and Boiler particulars.

JOHNSON'S
STEAM VESSELS OF THE ATLANTIC COAST

Complete and reliable information for shippers, owners, mariners, manufacturers, dealers—everybody connected with the shipping business.

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THE NEW LONDON SHIP & ENGINE COMPANY, Groton, Conn., writes INTERNATIONAL MARINE ENGINEERING that it has just sold a pair of 60-horsepower Diesel engines for installation in an oil company delivery boat, which will be in service in the Gulf of Mexico; a 120-horsepower engine for a cannery tender to operate on the Maine coast, and a 120-horsepower engine in a fishing boat on the Massachusetts coast. The New London Ship & Engine Company states that its engines received the highest award for marine Diesel engines at the Panama-Pacific International Exposition.

THE MARINE OIL ENGINE COMPANY has been incorporated in New York, with a capital stock of $200,000. The moving spirit in the formation of the company is Mr. W. R. Haynie, who is manager in the United States for Bolinders Company, Stockholm, Sweden, and who has his office at 30 Church street, New York. Mr. Haynie has had many years' experience in connection with the development of oil engines in the United States, and has also spent a great deal of time during the last four years in visiting the leading European plants manufacturing oil engines, and also the operating plants using such engines. As a result he has become convinced that there is a tremendous field open to the oil engine in this country, where 80 percent of the oil of the world is produced. The Marine Oil Engine Company, therefore, has been organized for the purpose of carrying on a consulting and advisory engineering business, with a view to the greater development and application of the capabilities of the oil engine. Special attention will be given to the building up of the American merchant marine, using oil engines as the propelling power. In this way, Mr. Haynie states, the handling of all classes of freight, in either coastwise, transatlantic, South American or Asiatic trade can be effected at the lowest cost per ton mile.

RYERSON TOOL STEEL NAME CONTEST.—Joseph T. Ryerson & Son, Chicago, Ill., opened a contest for the iron and steel trade about the first of the year, offering $100 for a name for their line of tool steel. Those sending in the next best 100 names were each to receive a Ryerson Ready Reference Book, a textbook well known for its valuable data and information. The next 200 contestants receive bound copies of the same book. The trade has shown much interest in the contest and has helped the Ryerson company in a material way to secure a good trade name. There were over 10,000 names entered. The judges ,after a long drawn-out deadlock, decided upon the word "Ryolite" as the winning name. First, because it will remind the buyer of Joseph T. Ryerson & Son; second, because there is an interesting story associated with the name. Ryolite, spelled "Rhyolite," is used to denote a class of hard, igneous rocks of volcanic origin. Rhyolite was the strongest material known to the ancient Aztecs, and was used for tools and weapons of various kinds. The most famous Aztec weapon, known as the Maquahuitl, was made from Rhyolite. Ryolite, the winning name, was entered by Mr. Robert H. M. McNeilly, Nashville, Tenn., and Mr. R. R. Kohlsdorf, Milwaukee, Wis. The honors and first prize were therefore divided equally, according to the law in public contests of this kind. A complete story of the contest and Ryolite is given in the October issue of the *Ryerson Monthly Journal and Stock List.*

A NEW, HEAVY OIL ENGINE.—The Southwark-Harris valveless engine, Diesel principle, is made by the Southwark Foundry & Machine Company, 428 Washington street, Philadelphia, Pa. This engine is described by the manufacturer in the following article, which was written for INTERNATIONAL MARINE ENGINEERING: "The engine was designed to overcome weak points in existing Diesel engines, and to produce an engine equally as reliable as a marine steam engine, and embodies in its design the best features of marine steam engine practice. Some of the distinguishing features of the Southwark-Harris engine are as follows: First, instead of admitting cold, high-pressure air into the working cylinder to start up or reverse, the step pistons are by a novel arrangement converted into air motors and operate with low-pressure air. In starting up the engine, air is at first admitted to the step cylinders, which are enlarged cylinders below the working cylinders, and which are alternately air motors and

ASHTON Pop Safety Valves The Quality Standard

ASHTON Steam Gages The Accuracy Standard

No. 16 Style Marine Valve

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17 BATTERY PLACE NEW YORK CITY

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Protective and Lubricating Boxes
FOR PROPELLER SHAFTS
Are fitted to more than 3,000 Steamers,
with shafts ranging between 1¾ in. and 20⅝ in. in diameter.
Our system insures maximum safety of propeller shafts, as these are running in oil, consequently no corrosion. . . . . .
The costly liners on shafts may therefore be dispensed with as being absolutely superfluous. . . . . .
FRICTION MINIMISED
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—POWER SAVED.—
Old Stern Tube Arrangements can be altered for application of this Lubricating Box at a very Nominal Cost. . .
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scavenging pumps without either function interfering with the other. This air starting on the step piston enables the engine to be designed only for its working pressures, approximately 500 pounds, instead of for 1,000 pounds pressure. The one great advantage, however, of the air starting on the step piston is the fact that cold, high-pressure air is never admitted into the hot working cylinder, a most prolific cause of cracked cylinder heads and pistons. Second, in the ordinary Diesel engine of both two and four-cycle types, there are from two to seven valves in each cylinder head. This makes a complicated casting, and even special material and most careful design have not eliminated the difficulties arising from the severe working conditions of pressure and temperature to which it is subjected. The casting must be strong enough to withstand the high air-starting pressure, must resist the high temperature of combustion and the frequent expansions and contractions previously mentioned without cracking or warping and be designed for efficient water cooling. The valves, with their cams, two to each in a reversible engine, are noisy; require considerable attention, and each one is another risk of a breakdown. The Southwark-Harris valveless engine, having port inlet and port exhaust and air starting on the step piston, does not have any valves in its cylinder head, there being only one small opening, that for the atomizer, and consequently the cylinder head is a very simple casting, and much of the trouble of ordinary Diesel engines is obviated. Third, In ordinary Diesel engines of the trunk piston type, it is necessary to give the pistons considerable clearance between the piston and walls of the cylinder on account of the expansion of the pistons. This is especially true in the case of a two-cycle engine, and is far more necessary in Diesel engines than in the ordinary internal-combustion engines, owing to the high temperature of compression on the in-stroke and the heat created by combustion on the outward stroke. The wrist pin, being away up inside of these hot pistons, receives considerable heat from same, which is also transmitted to connecting rod and bearings. With this excessive clearance the piston in a trunk type of engine has to take the side thrust of the connecting rod, which sets up a side flogging with its consequent noise. The Southwark-Harris valveless engine avoids these difficulties by using a step piston, and in this case the wrist-pin is comporatively cool in the step or lower piston, which practically does not expand; therefore, it can be a nice fit in the lower cylinder and acts as a circular crosshead guide for the main piston. In the larger sizes an adjustable marine type of crosshead guide is combined with and forms a part of the step piston. The main pistons can have ample clearance between themselves and the walls of the cylinder and 'let the rings do the work they are there for.' Another advantage of these step pistons acting as scavenging pumps is that they draw in upon themselves and around the working piston on its outgoing stroke a charge of atmospheric air for scavenging purposes. This air helps to cool the working pistons and the air itself at the same time is thus slightly heated. It is, therefore, apparent that when this scavenging air enters the working cylinders it is never cold, as is the case with four-cycle engines. Fourth, in the ordinary Diesel engine, governing is accomplished by having the governor act on a finger in the suction check valve, which, when governing, lifts the suction valves of the fuel pumps off their seats, thereby allowing the charge of fuel in the pump to be returned or pumped backwards into the suction pipe. Fuel oil has an affinity for air, and this by-passing churns the oil, and when the governor allows the check to seat the first few strokes, give foam instead of a solid stream. Again, with this method the spring of the check valve has to be very carefully adjusted so that it will not affect the working of the governor, and yet so that the oil flogging in the supply pipe from the service tank, caused by the rolling of the ship, will not cause the valve to jump off its seat. The Southwark-Harris valveless engine governs on a special variable stroke principle controlled by the governor. Once the line is cleared of air there is always a solid stream of oil from the service tanks to the atomizer, and the slightest movement of the pump plunger produces a corresponding movement in the column of oil; that is, if the plunger moves one thirty-second of an inch, then one thirty-second of an inch of oil by the diameter of the pump plunger is forced into the atomizer, or if the stroke be increased by the governor a corresponding additional amount of oil will be supplied. The oil is delivered from the service tank to the pumps under air pressure, taken care of by the engine, which may be anything from 5 pounds to 100 pounds, making it immaterial where the service tank is located. This carrying of oil under pressure is also a great advantage in using the heavier asphalt base oils, which have to be preheated, in that being under pressure the lighter distillates are not given off by heating as they would

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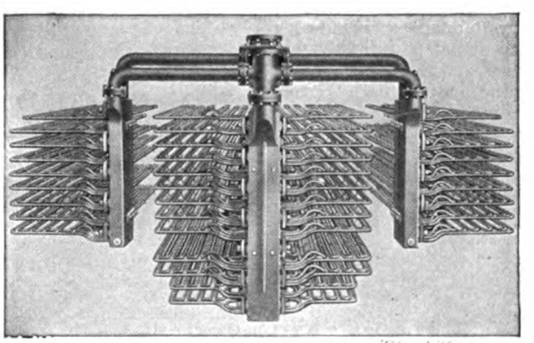

5. It results in a saving of fuel over saturated plants, both operating under the same draft conditions, of 10% to 20%.
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be in an open service tank or standpipe; and, again, if the oil is thick and slow moving a higher pressure can be used to force it through the lines. This it would not be possible to do with engines governing on a delicate valve. Fifth, in the ordinary Diesel engine it is necessary to hand-pump the fuel to the atomizer before starting, and in some cases while reversing. The Southwark-Harris valveless engine can stand idle for weeks and be started in a few seconds without hand pumping, owing to the method in use in its pumping and atomizer arrangements. Sixth, in the ordinary Diesel engine, like all other internal-combustion engines, it is impossible to start under load without a clutch or medium, as it is necesstary to first build up a momentum by running the engine on air and then cut out the air supply while the engine takes hold on fuel, or by using part of the working cylinders for air motors while the others are working on oil. There is an interval during which the engine is turning by momentum only, and this interval is likely to be noticeable in the case of a marine engine reversing from full ahead to full astern while the ship is under way. The Southwark-Harris valveless engine is the only internal-combustion engine able to start under load like a steam engine. In starting or reversing the Southwark-Harris valveless engine the action is similar to starting up a steam engine with an air pressure of from 175 pounds to, say, 300 pounds. This air, when allowed to act on the step pistons, will turn the engine over even with its load on so long as the engineer desires to do so, and after the momentum of the engine is built up the oil can be given to the main cylinders, the air still being allowed to act on the step pistons. This will augment the power being developed from the main pistons, and if the engineer desires it both the main and the step pistons can be acting at the same time, the former on oil and the latter on air. This feature alone is a distinctive advantage in the application of the Southwark-Harris valveless engine, and it enables the ship to respond more quickly and with more certainty in the case of reversing from full speed ahead to full speed astern, or *vice versa*. The Southwark-Harris engine has been changed from full ahead to full astern in two seconds, then from slow ahead to slow astern in less than five seconds. Seventh, in the ordinary Diesel engine the common practice in reversing is to move the camshaft on end, and it is necessary to lift all the valve levers off the cams first by means of compressed air. This requires considerable power to compress all the valve springs. After lifting them, the camshaft is moved on end and these levers allowed to return onto a new set of cams, after which air is admitted to the main or working cylinders to initiaolly turn the engine over. In the Southwark-Harris valveless engine, the reversing is done by moving one rod on each cylinder, which could be done by the little finger, however large the engine might be. No power is required, except that which can be exerted by hand, by the engineer, regardless of the size of the engine. The same wheel or lever which admits the starting air and the fuel oil controls the movement of these rods. This does away with a lot of small air valves and by-pass valves, levers and extra shafting, and the loose feathers in the camshaft, and the danger of this important member shifting from its exact setting. Eighth, the entire handling or control of the Southwark-Harris engine is done by one hand wheel, and it is not necessary to open or close any air or oil valves while changing from full ahead to full astern. There are no delicate adjustments, and the atomizer and pumps can be adjusted while the engine is running. The Southwark-Harris engine was recently inspected by a European engineer noted as an authority on Diesel engines, and after his inspection he summed up his comments by saying that it was a 'simplified Diesel.' The yacht *Southwark*, 98 feet by 16 feet by 7 feet, in which is installed a 150 brake-horsepower Southwark-Harris engine, recently made the round trip from Philadelphia to New York, a distance of approximately 600 miles, in 53 hours, at a fuel cost of $8.20 and an expense of $1.84 for lubricating oil. The yacht, with its owner, Mr. C. P. Vauclain, left Philadelphia Oct. 15 for the west coast, to go via the Panama Canal if it is possible to get through by the time the yacht reaches there, stopping at various points along the coast and Gulf to demonstrate the Southwark-Harris engine. The Southwark Foundry & Machine Company, which recently acquired the license to build this engine under patents of Leonard B. Harris, A. I. N. A., has recently secured contracts for a number of these marine engines for both marine and stationary service, and is anticipating a large business with this engine owing to the numerous inquiries and universally favorable comments received since the yacht *Southwark* was placed in commission a few months ago. Since that time the engine has been inspected by fully 500 engineers and others from all parts of the world."

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ALDRICH PUBLISHING CO.,
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Sworn to and subscribed before me this 29th day of September, 1915.
E. A. SANDERS.
(My commission expires March 31st, 1917.)

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IMPORTANT ARTICLES

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JULY, 1915

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Auxiliary Naval Vessels. Illustrated.
Steamer Emblane. Illustrated.
The Marine Terminals of Beaumont, Texas. Illustrated.
Development of Auxiliary Sailing Ships.
Completion of Locks and Dam No. 17 on the Black Warrior River. Illustrated.
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Davits and the New Requirements. Illustrated.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers. Illustrated.
Japanese Liner Fushimi Maru. Illustrated.
Economy Talks by "Old Scotch." Illustrated.
Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
- Some Defects and Remedies of Marine Diesel Motors.
- The Need of an Enrolled Naval Reserve.
- Poor Circulation in Boilers. Illustrated.
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Marine Articles in the Engineering Press.
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Launching of the Battleship Arizona. Illustrated.
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Questions and Answers for Marine Engineers. Illustrated.
Letters from Marine Engineers:
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- Duplex Pumps.

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Engineering Specialties. Illustrated.
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SEPTEMBER, 1915

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Side-Wheel Car Ferry Contra Costa. Illustrated.
Interior Views of the Great Northern. Illustrated.
Modern Submarines in War and Peace—III. Illustrated.
Notes on the Conversion of Cargo Vessels into Bulk Oil Carriers—VI.
Economy Talks by "Old Scotch." Illustrated.
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Letters From Marine Engineers:
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- Explosives of the Engineers' Department.
- Some of the Most Common Troubles with the Marine Gas Engine and Suggestions for Determining and Remedying Same.

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Steamship Design. Illustrated.
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Calculations for Ships' Forms.
International Engineering Congress.
Design of Small Screw Propellers. Illustrated.
Modern Submarines in War and Peace—IV. Illustrated.
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HIGH AWARDS granted the Lunkenheimer Company at the Panama-Pacific International and Panama-California Expositions. The medal of honor has been granted The Lunkenheimer Company, Cincinnati, Ohio, at the Panama-Pacific Internatioal Exposition, and the grand prize at the Panama-California Exposition. The exceptionally large and complete line of engineering appliances exhibited at the expositions covers in great variety bronze, iron, "puddled" semi-steel and cast steel globe, angle, cross, check, gate, balanced throttle and non-return safety boiler stop valves; also bronze and iron pop safety, relief and blow-off valves; water columns and gauges; whistles, ground key work, injectors and ejectors; bronze fittings and unions; cylinder lubricators, oiling devices, oil and grease cups; automobile and motor boat specialties, etc. The Lunkenheimer Company writes THE BOILER MAKER that it feels that the truth of the statement it has always made—that of being manufacturer of only goods of the highest quality—has been fully corroborated by the decision of the juries of awards in granting the prizes.

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TRADE PUBLICATIONS

"Apexior" is described by Phillip Bellows, 74 Pearl street, Boston, Mass., in a circular just issued. "Apexior" is described as being "not a boiler fluid but a compound to be applied to the inside surface of boilers, steam turbines, feed heaters, evaporators, etc., to prevent the forming and adhesion of scale, corrosion and pitting."

The Blake-Knowles twinplex beam air pump for use on shipboard, is described in a circular published by the Marine Department of the Blake & Knowles Steam Pump Works, 115 Broadway, New York. This apparatus is a system of wet and dry vacuum pumps combined to form a unit of minimum weight, occupying the least possible space and capable of great efficiency in service. One cylinder takes the condensed steam and the other cylinder the air and uncondensed vapors, the whole being handled in such a manner that the dry cylinder displacement requirement is less, and the efficiency of the unit higher than in the case of an ordinary air pump.

Searchlight projectors are described by Engberg's Electric & Mechanical Works, 6 Vine street, St. Joseph, Mich., in a circular the company has just published. "Engberg searchlight projectors can be furnished from 8 to 20 inches in diameter. They are especially adapted for ocean, lake and river navigation. When used in connection with an Engberg direct-connected generating set, they make an ideal installation for vessels of any size. Remember, both generating sets and searchlights have been adopted by the leading shipbuilding concerns and very extensively by the United States and Canadian Governments."

The main steering gear for the United States battleship *Pennsylvania,* which the Newport News Shipbuilding & Dry Dock Company is building, was furnished by the Kerr Turbine Company, Wellsville, N. Y., and is described in a circular the company has just issued. The gear illustrated in this circular has 104 teeth, is 9 inches wide and has a pitch diameter of approximately 7 feet. Those familiar with the stringent Government specifications in such cases can realize the magnitude of the contract which the Kerr Turbine Company undertook in agreeing to furnish a gear of this size according to specifications.

Thermometers for every service are manufactured by the H. & M. Division of the Taylor Instrument Companies, Rochester, N. Y., and are described in a profusely illustrated catalogue the company has just issued. In addition, the Taylor Instrument Companies make straight and angle stem temperature and pressure regulators, mercury vacuum and absolute pressure gages, glass stem engraved thermometers, hygrometers and hydrometers, and thermo-electric and radiation pyrometers.

Bulletin No. 50—The Phenix Force Feed Lubricator—recently issued by The Richardson-Phenix Company, Milwaukee, Wis., contains a complete description of the Phenix ratchet type lubricator; it also describes a new type, known as the Model "T." The catalogue contains an interesting diagram, giving a comparison of the way in which mechanical and hydrostatic lubricators feed oil to engine cylinders. Numerous illustrations show the application of the Phenix lubricator to different types of engines, pumps, steam hammers, etc.

A complete line of steamship berths, also brass and iron beds, mattresses and pillows, is made by the Bernstein Manufacturing Company, Department C, Third and Allegheny avenue, Philadelphia, Pa., and is described in Catalogue 17 just published. The catalogue states that the company makes a complete, practical and efficient line—"a berth to successfully meet every condition on board ship." One of the distinctive features of the Bernstein No. 5550 folding berth is that it cannot work out of the supporting socket. Bernstein berths have been supplied for leading shipbuilders throughout the United States and other countries.

Ozonators for cold storage warehouses are described by the Sprague Electric Works, 527 West Thirty-fourth street, New York, in a bulletin just published. "Although reliable and satisfactory ozonators have been on the market but a few years, they have already become a recognized adjunct to the equipment of all modern up-to-date cold storage houses. Ozone is simply the oxygen of the air changed into a highly active state by the action of the electric current in the Ozonator. In this form it has the remarkable power of destroying by oxidation or burning up the odor-bearing particles of matter floating in the air. This results in the permanent removal of the odor without the necessity of introducing chemicals of any kind."

Recovery of Oleite

LEITE TRADE MARK

WE have already stated that once Oleite seizes upon oil it cannot be made to let go of it except by burning. There are two or three ways of doing this very conveniently but this advertisement has no space to describe them.

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Our Bulletins give further information.

You can assist us greatly in our publicity work by referring to this advertisement as D10. Our thanks in advance.

WILLIAM ANDREWS, Inc.
120 Liberty Street, NEW YORK

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Valves of all kinds for marine use are described in a catalogue published by the Pratt & Cady Company, Inc., Hartford, Conn.

All-manila rope is described in a catalogue published by the Whitlock Cordage Company, Department M, 46 South street, New York. The Whitlock manila is guaranteed to be all-manila, and to give maximum service.

Prosser boiler tube expanders are the subject of a circular published by Thomas Prosser & Son, 24 Platt street, New York. This company makes boiler tube expanders of its own standard, or will make them to any special shape and size desired.

Lap welded pipe, flues, drums, cylinders, boiler flanges, Taylor seamless boiler nozzles and corrugated furnaces are described by the American Spiral Pipe Works, P. O. Box 485, Chicago, Ill., in a bulletin the company has just issued.

The Lennox serpentine shear is the subject of Bulletin No. 50, published by Joseph T. Ryerson & Son, Chicago, Ill. In the bulletin are illustrated fourteen shapes cut with a Lennox shear, which is stated to be economical and rapid in this work. Anyone interested in this subject should send for a copy of the bulletin.

Waterbury rope—wire rope, armored wire rope and fiber-clad wire rope—is described in a catalogue just published by Waterbury Company, 63 Park Row, New York. In this catalogue the statement is made that the Waterbury Company is the only manufacturer making every kind of rope used aboard a vessel, and it can supply every rope need from stem to stern.

"Some Users of D-B Apparatus" is the title of a booklet published by the Davis-Bournonville Company, Jersey City, N. J. A copy of this booklet will be sent to anyone on request, together with a catalogue showing the wide range of oxy-acetylene apparatus made by the Davis-Bournonville Company for both stationary and portable use. The company will also send bulletins on any kind of work in which you are interested, either welding or cutting.

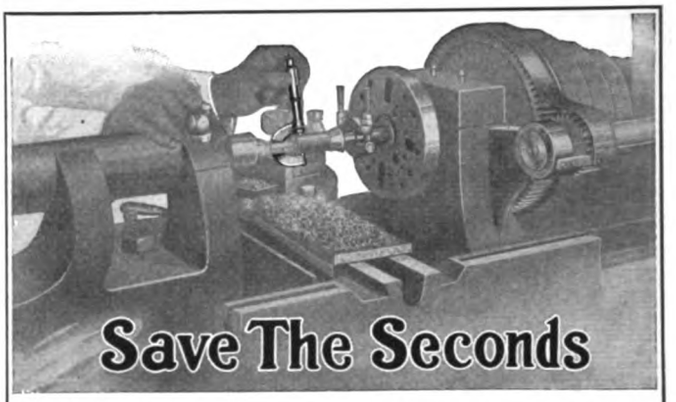
Tools and instruments of precision are described in Catalogue 20-L, issued by the L. S. Starrett Company, Athol, Mass. Whether you are a machinist, a foreman, a superintendent, an engineer or manufacturer, the Starrett Company has tools for your use which are designed to save time. For example, the Starrett quick-acting micrometer can be instantly opened or closed to any point ready for the fine adjustment.

"The Oster Pipe Threading Machine" is the subject of a catalogue issued by the Oster Manufacturing Company, 2117 East Sixty-first street, Cleveland, Ohio. This machine is stated to require less floor space than the ordinary pipe threading machine, and yet to thread bent pipe, bolts and nipples as well as straight pipe. It is belt or motor-operated, threads bolts from ½ to 1⅝ inches, and pipe from 1 to 4-inch sizes.

A valveless oil engine, which is guaranteed to produce full power from stone-cold in 10 seconds, is described and fully illustrated in Catalogue 3 I-M, just issued by the Southwark Foundry Machine Company, 430 Washington avenue, Philadelphia, Pa. In this catalogue the statement is made that a 150-horsepower engine installed in a yacht has been in daily operation for several months, and recently made a trip from Philadelphia to New York in 24 hours against a stiff northeast wind and sea, consuming but 169 gallons of Mexican fuel oil at 2½ cents per gallon.

"Why Burn Up Profits?" is the title of a circular published by The Improved Combustion Company, People's Gas building, Chicago, Ill. In this circular the company gives a photograph of a check for $1,548.30 received from a steamboat company, which it states was for a 60 percent saving in cost of fuel for one month on four Mississippi River steamers, the actual saving being $2,580. "The cost of our installation will be paid for in a few months, and then the owners of the line will have this great additional profit in operation with no discount of any kind."

The Cummings Direction Indicator is the subject of an illustrated catalogue published by the Cummings Ship Instrument Works, 110 High street, Boston, Mass. This instrument has one pipe and no valves, and is operated by means of pressure or vacuum produced by a small pump connected to the propeller shaft. For rotation forward the vanes within the pump produce a partial vacuum, throwing the pointer into the ahead position. When the shaft is reversed the vanes of the pump produce a definite pressure within the pipe leading to the indicator, thus throwing the pointer into the astern position. As soon as the shaft comes to rest the indicator returns to zero.



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Starrett Tools
and Instruments of Precision

are designed to save time. For example, the Starrett Quick Adjusting Micrometer can be instantly opened or closed to any point ready for the fine adjustment.

Other Starrett Tools are Vernier calipers, combination squares, steel tapes and rules, dividers, hack saws, wrench sets, screw drivers, expansion pliers. Send for free catalog No. 20-L.

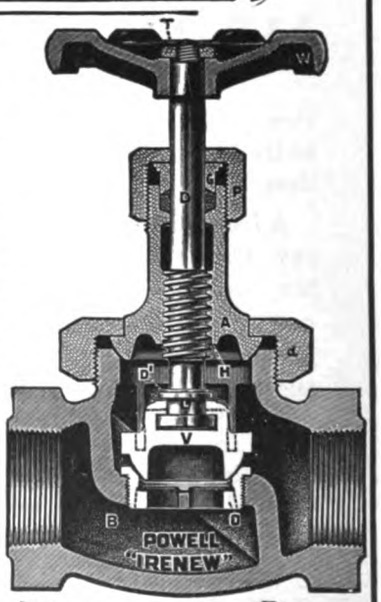
THE L. S. STARRETT COMPANY
"The World's Greatest Tool Makers"
ATHOL, MASS.
New York London Chicago

POWELL VALVES
(Especially The "White Star" Valve)

Get Acquainted with the Service Given by the New Powell 'IRENEW' Valve

You will find it well worth your while.

Note: The special features of this **new "Irenew" Valve shows the Disc and Seat Ring cast of White "Powellium" Bronze** which insures long life — the bevel ground joint connecting body and bonnet, swivel union nut, thread on outside of valve body where steam can't reach them. Red lead or cement is unnecessary to make it tight.



Ask your dealer for Powell Valves or write us

THE WM. POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES.
CINCINNATI, O. 2-6

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Just because it's a small job don't think that it doesn't pay to use or specify

DIXON'S
SILICA
GRAPHITE PAINT

Think of what's saved in the labor cost of frequent repainting. For smokestacks, iron and steel hatches, steel masts, steel poles and other metal work. Color card No. 75-B upon request.

Made in Jersey City, N. J., by the
JOSEPH DIXON CRUCIBLE CO.
ESTABLISHED 1827
B-94

Mietz & Weiss oil engines for marine service are described in Bulletin M-21, which the August Mietz Works, 130 Mott street, New York, has just issued. These oil engines have no carburetor and no electric ignition.

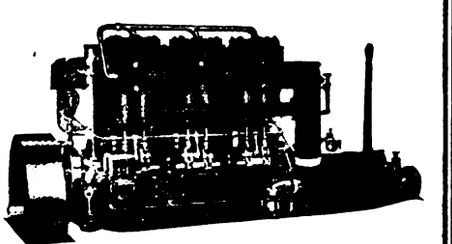
"Centrifugal Pumps" is the title of a 64-page bulletin just issued by The Terry Steam Pump Company, Hartford, Conn., giving details and data on various turbo-pump applications. The principles of operation and construction of the centrifugal pump are clearly explained, as are the details of the steam turbines which have been successfully used during the past ten years for driving them. Because of the wide latitude of speed possible with the turbine, the unit occupies a much smaller space than would be required for a pump performing the same duty but driven by a reciprocating engine. The range of conditions in this service varies from large volumes of water pumped against low heads, such as circulating water for condensers or for irrigation up to high head work, such as boiler feeding or fire service. The reliability and entire freedom from shut down due to accidents, repairs or packing renewals, have placed the Terry pumping units in a class by themselves. This booklet should certainly be in the hands of those who are interested in any kind of a pumping problem.

Ships' winches are described by the Lidgerwood Manufacturing Company, 96 Liberty street, New York, in a catalogue the company has just published. These machines are stated to be built upon a duplicate part system, insuring an absolute fit and prompt delivery of spare parts. The winches handle cargo rapidly, economically and quickly, thus saving ships' time in port.

Firetube superheaters for marine boilers are described in Catalogue "A," published by the Locomotive Superheater Company, 30 Church street, New York. The Schmidt superheater, which is described in this catalogue, is stated to save from 10 to 25 percent of fuel per unit of power developed, and to increase the power output of a given marine power plant from 10 to 25 percent. It is adaptable to either new or existing boilers of the firetube type, with no change in their design or construction.

High-speed twist drills. reamers, countersinks, flue cutters and lathe tools are described in illustrated Catalogue No. 15, just published by the Celfor Tool Company, Buchanan, Mich. "The Celfor Tool Company is the pioneer in the manufacture of high-speed twisted drills. We originated and perfected the twist drill, and our efforts have since been devoted to the manufacture of drills and other tools by the twisting process. Since the first twisted high-speed drill was placed on the market by this company, it has been conclusively proven that tools so made possess distinct advantages over those milled from the solid. The forging or rolling of our sections to shape before twisting, tends to densify the metal and produces tools which cannot be excelled for strength and cutting qualities. We were the first to recognize that high-speed drills must have ample chip clearance and extra large shanks to accomplish the work for which they are intended. Our success in producing thoroughly efficient tools is attested by our large and constantly growing business."

Duplex block metallic packing is described in a circular which has just been issued by the United States Metallic Packing Company, 429 North Thirteenth street, Philadelphia, Pa. "This packing is in two independent sections, separated by the dividing piece, the upper section, consisting of white metal rings with vibrating cup, follower, etc., being in the stuffing-box, and the lower section, consisting of blocks with horn rings, sliding plate, ball joint, etc., being contained in the gland. The upper or inner set of packings consists of three babbitt metal rings, each in three parts, contained in the vibrating cup. There is a ground joint between the flat face of the vibrating cup and the dividing piece. Above the babbitt metal rings come the follower and the upper spring bushing in pockets, in which are contained the upper follower springs, and then in the bottom of the stuffing-box the preventer, varying in length according to the depth of the box. As the dividing piece is bolted to the face of the stuffing-box independently of the gland which contains the lower or outer set of packing, the blocks in the lower set may be renewed or any other necessary work done to same without taking down the upper set of packing or in any way disturbing it. The lower or outer section of the packing consists of eight blocks, babbitt lined, which are held in rings having horns holding springs. The packing blocks are put together in sections, four blocks to a section. Each section is composed of two working blocks and two guide blocks. The joints between the blocks in each section are at right angles to each other, thus breaking joint. Small follower springs in pockets are also used behind the follower plate. The combination of the sliding plates and ball ring having ground surfaces allows for the movement of rods out of line. The spring pressure is so regulated as to merely hold the parts in place when the engine is running without steam. A hole is drilled in the gland for a nipple and globe valves so that condensation can be drained off."

WOLVERINE for MARINE SERVICE
THE MOTOR WITH THE BORE and STROKE
FUELS { KEROSENE (PARAFFIN)
GASOLINE (PETROL)
DISTILLATE
SUCTION PRODUCER GAS
Write for Catalogue No. 73

WOLVERINE MOTOR WORKS BRIDGEPORT CONN. U.S.A.
formerly GRAND RAPIDS, MICH.

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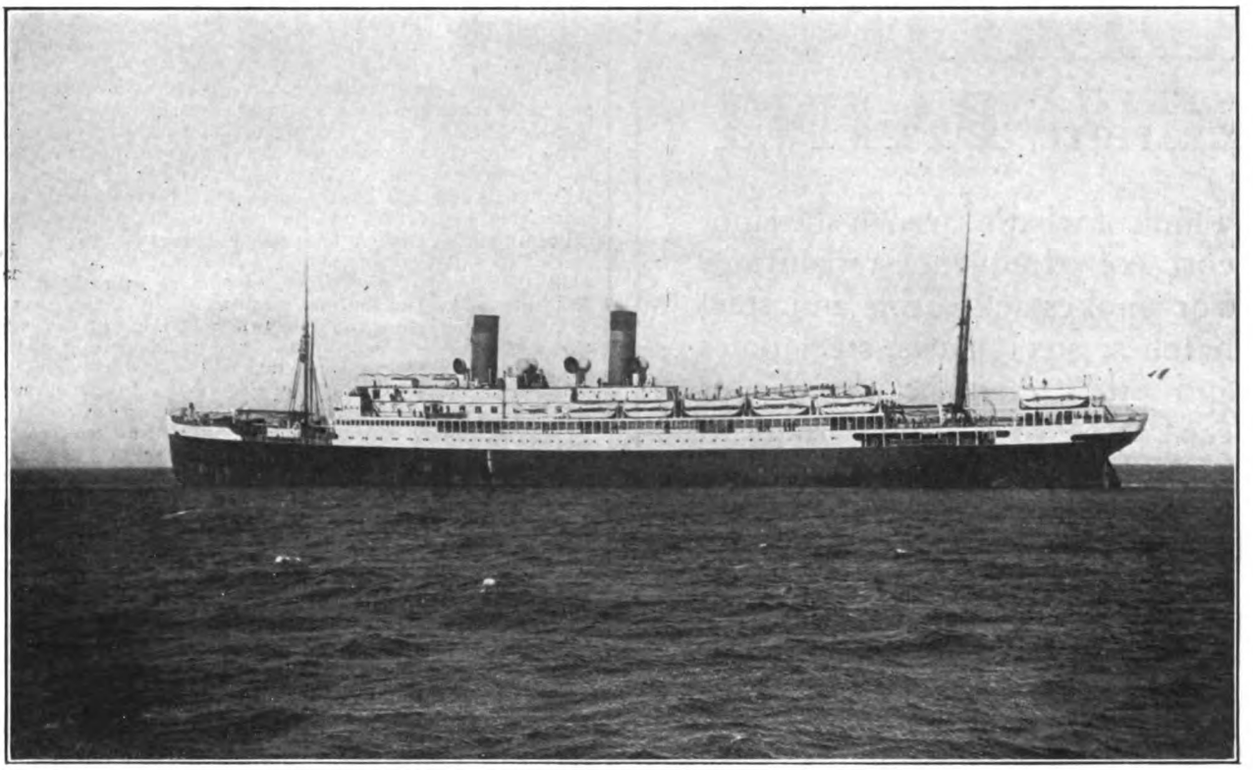
The New Quadruple-Screw Steamship "Lafayette" of the French Line



Equipped with Welin Quadrant Davits and Lundin Decked Life Boats

This equipment covers the requirements in accordance with the provisions of the International Conference on Safety of Life at Sea.

It provides life boat capacity for all on board, and insures the greatest efficiency and security in time of need.

WELIN MARINE EQUIPMENT CO.

305 Vernon Ave.,
Long Island City, N. Y.

London House { 5 Lloyds Ave.,
London, E. C.

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"Oleite," for freeing feed water from every particle of oil, is described in Catalogue D-10, published by William Andrews, Inc., 120 Liberty street, New York. The use of "Oleite" is especially recommended on board ship.

"Durable" wire rope for mooring, towing hawsers, ships' rigging, and all similar purposes, is described in a catalogue just issued by the Durable Wire Rope Company, 93 Pearl street, Boston, Mass. The manufacturer states that this rope is made of selected steel, and that each strand is separately served with especially prepared hemp marlin. The rope is also stated to combine the pliability and wearing service of hemp or manilla ropes with the strength of ordinary wire rope, avoiding the disadvantages of both, and being more durable and economical than either.

A full line of valves is described in a circular issued by McNab & Harlan Manufacturing Company, 55 John street, New York. "To meet the demands of the trade and marine engineers for a first-class valve, we have designed and made equipment to produce a full line of regrinding valves. These valves are manufactured under strictly up-to-date methods. Compared with other valves of this type, the workmanship and alinement of all parts are second to none. The metal is of the very best quality steam metal, and selected after careful consideration and chemical and physical tests to be the most satisfactory to give service where conditions require a valve of superior quality."

Regrinding valves are described in an illustrated pamphlet just published by the Penberthy Injector Company, Detroit, Mich. "The ever-increasing demand to-day by power plant owners and steam users in general is for valves that will give absolutely reliable service and dependability under high pressures and severe conditions, and that are free from unnecessary renewal of disks and repair parts. To meet this demand the Penberthy regrinding valve has been designed. It is the result of many years of practical experience in the manufacture of high-grade brass goods, and embodies the best mechanical ideas ever employed in mechanical valve construction. The distribution of metal is such that parts subjected to the greatest strain and wear have proportionately heavier walls. For the present we illustrate only the medium pattern type, which is designed to stand a constant working pressure of 200 pounds."

Revolution counters for marine use are among the instruments described by the Veeder Manufacturing Company, Hartford, Conn., in a catalogue just published.

J-M Sea Rings. according to an illustrated "Blue Book (a copy of which will be sent free to any of our readers upon request), eliminate 75 percent of the waste of power caused by rod friction. This blue book is published by the H. W. Johns-Manville Company, Forty-first street and Madison avenue, New York, and a copy should be in the hands of all engineers and shipowners. In this book the statement is made that it is estimated that rod friction, caused by soft packing, consumes at least 5 percent of engine power. J-M sea rings are self-lubricating, and it is stated that they will withstand the highest temperatures and pressures; that they are ideal for superheated steam, high-pressure hydraulics, marine engines, hot and cold water pumps, etc.

The Never-Slip Safety Clamp for handling boiler plate is described in a circular just published by the Never-Slip Safety Clamp Company, 141 Broadway, New York. "The Never-Slip Safety Clamp is superior to any other clamp ever put on the market, combining great strength with absolute safety and considerable saving in time and labor. The clamps are made of high-class open-hearth steel and are annealed. They cannot slip, but give a strong, tight grip and are very easily attached or removed. Size No. 1 will lift plates up to ¾ inch thick, and has a capacity of 6 tons per pair, or being able to lift 400 square feet of plate with absolute safety; weight per pair 10 pounds. Size No. 2 will lift plates from ¾ inch to 1½ inches thick, and has a capacity of 9 tons per pair, thus being able to lift 300 square feet of plate with absolute safety; weight per pair 30 pounds. Size No. 3 lifts plates from 1½ inches to 2 inches, and has a capacity of 12 tons per pair, thus lifting 300 square feet with absolute safety; weight per pair 72 pounds. The vertical plate clamps are made also of high-class open-hearth steel and are annealed. Size No. 1 vertical clamp will lift plates up to 1 inch thick, and has a capacity of 4 tons; weight per pair 44 pounds. Size No. 2 vertical clamp will lift plates from 1 inch to 2 inches thick, and has a capacity of 9 tons; weight per pair 84 pounds. Invaluable to boiler makers, rolling mills, foundries, tank constructors, ship yards, or any plant where plates or metal sheets are handled. Cannot slip and by its use costly accidents are avaided."

In Mr. Webster's Book

"INDESTRUCTIBLE"
WHITE SHEET PACKING

STYLE NO. 10

the word INDESTRUCTIBLE
is defined thusly
INDESTRUCTIBLE - NOT DESTRUCTIBLE
INCAPABLE OF DECOMPOSITION OR OF BEING DESTROYED

HAD BROTHER NOAH KNOWN ABOUT
INDESTRUCTIBLE PACKING
HE WOULD HAVE MADE THE DEFINITION STRONGER!
and he would have been right
FOR INDESTRUCTIBLE PACKING IS WONDERFULLY MADE
GUARANTEED TO STAND HIGH AND LOW PRESSURE STEAM, HOT AND COLD WATER OIL, GREASE, AMMONIA AND ACIDS OF ALL KINDS.

INDESTRUCTIBLE *is the King of all* PACKINGS
WRITE - WIRE OR PHONE FOR SAMPLES, PRICES AND FURTHER INFORMATION AND COPY OF OUR ENGINEERS CATALOGUE SHOWING PACKINGS FOR ALL CONDITION OF SERVICE

NEW YORK BELTING AND PACKING COMPANY

NEW YORK, N.Y. *91-93 Chambers St.*
CHICAGO, ILL. *124-126 W. Lake St.*
PHILADELPHIA, PA. *821-823 Arch St.*
PITTSBURGH, PA. *420 First Ave.*
BOSTON, MASS. *232 Summer St.*
SAN FRANCISCO, CAL. *519 Mission St.*
SPOKANE, WASH. *157 So. Monroe St.*
ST. LOUIS, MO. *218-220 Chesnut St.*

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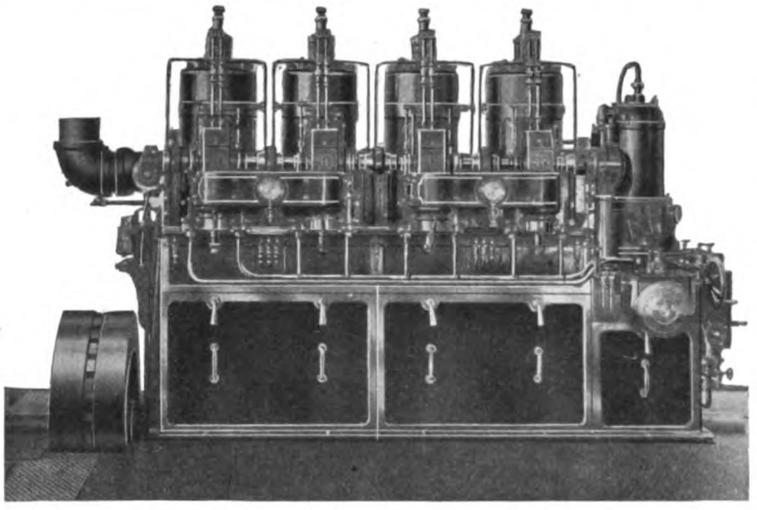
From Stone Cold to Full Power in 10 Seconds

When the Power is Shut Off the Fuel Expense STOPS



SOUTHWARK-HARRIS VALVELESS OIL ENGINE

Users of power can readily estimate the great saving from this one point alone. NO fuel is wasted in getting ready to start. In ten (10) seconds this engine can be brought up to FULL POWER. It is always ready when wanted. No getting up of steam required; no making gas; no coal-dust or ashes and no smoke.

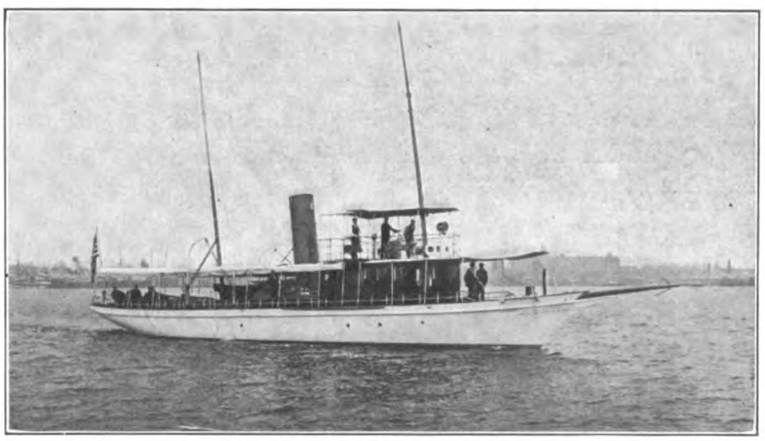
Simple
Economical
Durable
Compact
Get-at-Able
Quiet Running
Safe

} Requisites for commercial service and now, for the first time, obtainable.

This engine has proved the most reliable of heavy oil engines. It is of the two-cycle type built in two, four, six or eight cylinder units with multi-stage vertical air compressors worked off the crank shaft.

An interlocking device enables the Southwark-Harris Engine to build up its operation on oil while still working on compressed air or reverse from full speed ahead to full speed astern in five seconds. It can be started with a load on or can be slowed down with equal certainty and greater ease than a steam engine of similar power.

A 150 horsepower engine installed in the Yacht SOUTHWARK has been in daily operation for several months and recently made a trip from Philadelphia to New York in 24 hours against a stiff north-east wind and sea; consuming but 169 gallons of Mexican Fuel Oil at 2½ cents per gallon. The actual costs were:



The Yacht "SOUTHWARK"
Length 98 ft. Beam 16 ft. Draft 7 ft. Equipped with Type 4 AM Southwark-Harris Engine.

Fuel Oil	**$4.22**
Lubricating Oil	**0.93**
Total Cost	**$5.15**

The proof that a Southwark-Harris Valveless Oil Engine has made such a notable performance on the Yacht "Southwark" is the best possible recommendation for investigation on the part of vessel owners.

FOR SUBMARINES

We are now equipped and prepared to bid on submarine engines of the cross-head type, from 450 to 900 horse power.

Write for Catalog 3-I M

SOUTHWARK FOUNDRY & MACHINE COMPANY

430 Washington Avenue, Philadelphia

Old Colony Building, Chicago, Ill. **Brown-Marx Building, Birmingham, Ala.**

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"Actual Pipe Threading Experiences" is the title of a booklet which has just been published by the Oster Manufacturing Company, 2117 East Sixty-first street, Cleveland, Ohio. In this catalogue is illustrated a combination pipe, bolt and nipple-threading machine for use in ship yards. It is stated that the use of this machine three days a week pays 35 percent on the investment over ordinary pipe threading methods, making it a profitable outlay for both large and small yards. It is furnished in four sizes for either belt or motive drive. For use on board ship the Oster No. 206 geared machine is a strictly one-man tool, making it possible for one man to thread all sizes of pipe from 1 to 6 inches without special effort. The wide range, the two speeds on one crank, and the automatic cutting-off attachment are all features which, it is stated, make it particularly fast and convenient for marine use.

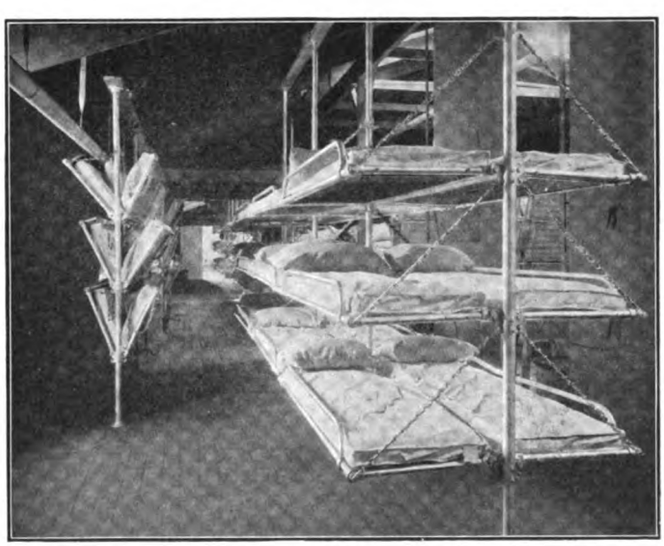
Two Useful Tools.—W. D. Forbes, 230 Hempstead street, New London, Conn., has put on the market a center punch and has published an illustrated circular describing it. Both ends of this punch are hardened, and the knurling is nice and sharp and the workmanship and material of the best. The price, prepaid to any part of the United States, is only 10 cents. Another tool described by Mr. Forbes in the same circular is a surface gage, of which the following statement is made: "A quick, vertical adjustment is obtained by sliding the arm up and down the column and securing it in any desired position by tightening a knurled thumb screw, the thrust of which is taken on a copper washer, which prevents the column from being bruised. A coarse, quick, vertical adjustment of the needle is obtained by loosening a knurled thumb nut, which permits the beam to be tilted on the arm, the thumb-nut holding it securely in position. The out-reach of the needle, which is ⅛ diameter, can be adjusted by sliding it in and out by loosening the knurled thumb-nut shown under the left-hand end of the beam. A micrometer adjustment of the needle is obtained by turning a knurled nut shown in the jaws of the beam at its right-hand end. The base is drilled with two ⅛-inch holes, in which plugs can be placed when the gage is used to set work parallel to the edge of a planer bed or other machine, or where it is more convenient to use the gage on the rail of a planer than from the face of its platen. Price, net, to any part of the United States, $1.25."

Vertical twin beam air pumps are described by M. T. Davidson Company, 154 Nassau street, New York, in a catalogue just issued. The Davidson Company manufactures a full line of marine pumps, condensers, ash ejectors, etc.

The American "Ideal" steam trap is described in an illustrated "Trap Data Booklet," published by the American Steam Gauge & Valve Manufacturing Company, Boston, Mass. In this booklet it is stated that the ideal way to specify steam traps is to know the size orifice in the trap valve. This is what governs the capacity, because no more condensation can pass through the trap than can pass through the valve. This information is published in the booklet mentioned.

"The Motsinger Double Rotary Engine" is the subject of a bulletin published by the Motsinger Rotary Engine Company, Fredonia, Pa. This engine is described in part as follows: "This double rotary engine is so called because it has two rotors, each with two vanes or pistons parallel on each side of an abutment rotor, having two clearance grooves, in such a way that one vane of one engine on one side the abutment rotor receives its steam simultaneously with one vane of the other engine on the other side of the abutment rotor, using a pair of diagonal ports for inlet and a pair of reversed diagonal ports for exhaust—practically forming two powerful co-acting engines exactly alike. We do not believe this principle will ever be surpassed for power production from steam. It is clearly and fundamentally applicable not only for steam and air engines, but for air compressors, vacuum pumps and high-pressure water pumps. Roughly, the general plan consists of a central cylinder or casing having a small bore for the long valve rod above, and three bores below with equal centers in the same horizontal plane to contain the smoothly cut cast iron rotors which are mounted on steel shafts. The two outside rotors have each two vanes or pistons and the middle or abutment rotor has two grooves. Bolted to the cylinder is a steam inlet head on one end and an exhaust head at the other, each containing steam chambers and valves and having adjustable bearings for the two outside rotors. Mounted on extensions of these shafts are three equal gears in an oil-tight case, and a pulley or power wheel is keyed on extension of the center shaft from which power is taken."

BERNSTEIN METAL BERTHS



Bernstein No. 5550 Folding Berth, installed on U.S.S. "Newark," Providence Harbor.

"STANDEE BERTHS ONE OF OUR SPECIALTIES." We have built them in quantities for the largest shipbuilders in the U. S.

Manufactured in their entirety in a plant which is one of the oldest, largest and best equipped metallic bed and bedding factories in the country.

A complete, practical and efficient line is offered. "A berth to successfully meet every condition on board ship." Also brass and iron beds, mattresses and pillows.

We describe them fully in a catalog which should be on your files. WRITE FOR IT — SPECIFYING CATALOG NO. 17.

One of the distinctive features on our No. 5550 Folding Berth. The berth cannot work out of the supporting socket.

BERNSTEIN MFG. COMPANY, Dept. C., 3rd & Allegheny Ave., PHILADELPHIA, PA.

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"Lowell Duck," which is described as the "standard yacht sail cloth," is the subject of a catalogue which has been published by the Boston Yarn Company, Boston, Mass.

Electric tractors. for use on piers and docks, are described by the Elwell-Parker Electric Company, Cleveland, Ohio, in bulletins recently issued. The company will be very glad to give full information in reference to any particular problem.

"Pneumatic Flanging Machines" is the title of an illustrated catalogue of 18 pages just published by the McCabe Manufacturing Company, Lawrence, Mass. In this catalogue the company presents photographic illustrations of work actually flanged by the McCabe machine in different shops, together with references from many large and successful plate working establishments, with which to prove the company's claims. Among the illustrations of work actually performed are some heads for rectangular tanks, both with round corners and square corners; a round storage tank 10 feet in diameter, ½ inch thick, the head of which has been flanged with the McCabe pneumatic flanging machine; a special tank, showing irregular flanges, made with the same machine; some dished heads, ½ inch in thickness, which were flanged cold; a cone bottom for a rendering tank, and others. The company states that with this method of flanging it is possible to flange plates any length or width and up to ½ inch in thickness cold. This class of flanging is stated to be especially valuable in smoke flues, rectangular up-takes, fireboxes for portable boilers, bulkheads, partitions and deck plates for ship work, etc. The catalogue states that round corners up to 8 inches radius and all thicknesses up to ½ inch are flanged in one heat and with one turn of the bender, and that this operation may be performed on rectangular plates that have been flanged on two or more sides previous to the corner. The company says that although the combination of a hand forge and this pneumatic flanging machine is effective for this work, its special oil heater will give more speed. Among the testimonial reports are some from the Standard Oil Company, the Hodge Boiler Works, East Boston, Mass.; the Christopher Cunningham Company, Brooklyn, N. Y.; the Quaker City Iron Works, Philadelphia; the New England Iron Works, Boston, Mass.; the Scannell Boiler Works, Lowell, Mass.; Michael Fogarty, Inc., New York; the Struthers-Wells Company, Warren, Pa., and others.

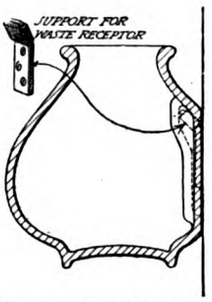
Nosing and bending steel shells are described in Bulletin No. 5003 just published by the Hydraulic Press Manufacturing Company, Mt. Gilead, Ohio.

A Drill Bulletin has just been published by the Keller Pneumatic Tool Company, Fond du Lac, Wis. Keller rotary pneumatic drils are described in this bulletin as follows: "Keller rotary type drills are well known as being powerful and durable. All delicate parts are eliminated in this style of portable pneumatic drill. The number of parts is very small as compared with piston drills, and the parts are less liable to wear out or get out of order, making reduced repair cost. The motor runs at a high speed; this means an economical gear reduction and a light-weight machine. There is absolutely no vibration when these tools are in operation, and they are, therefore, especially well adapted for reaming and tapping, besides being a steady tool for drilling and flue expanding. The material used in the drills is of the best grade of vanadium steel casting for the housing, drop-forging for the gears, phosphor bronze for the pistons and piston blades. The drill spindle runs in ball bearings, eliminating all unnecessary friction and giving the best efficiency for the least consumption of air."

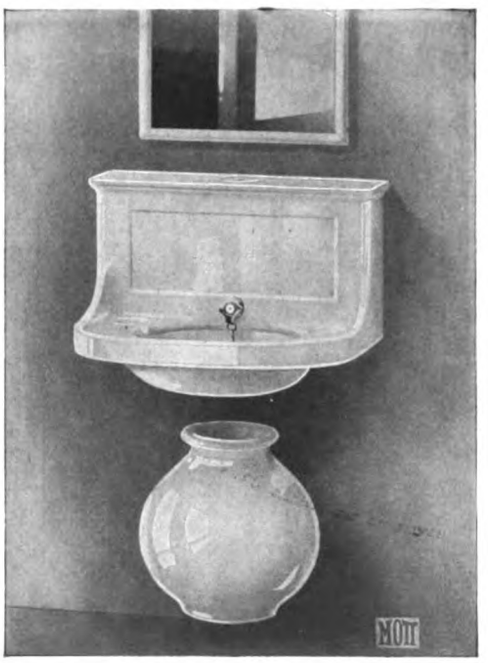
A marine type of refrigerating machine is described in an illustrated catalogue which has just been printed by the Clothel Company, 90 West street, New York. Regarding the company's 3-ton marine machine the catalogue makes the following statement: "On account of the exceedingly small space available for refrigerating machinery on small pleasure yachts we have spent a great deal of time in developing a machine with the idea of using as little floor space is possible. Our efforts have been rewarded by the design of our 'M' type machine. This machine consists of a rotary compressor driven through a flexible coupling and outboard bearing by a Morse silent chain from a variable speed electric motor. The brine and water pumps are driven by gears from a driving gear placed on the main drive shaft. These three gears run in a cast iron oil-tight housing, which precludes any possibility of noise. The chain is incased in an oil-tight sheet metal chain guard. All of this apparatus is mounted on a cast iron bedplate, and all the necessary auxiliary connections are furnished, including suction strainer and lubricant sight feed."

MOTT'S "COLONIAL" MARINE LAVATORY

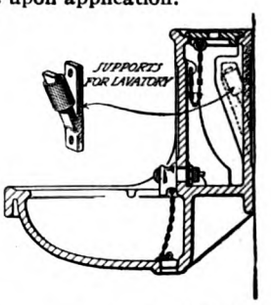
Weight of lavatory ..... 68 lbs.
Weight of receiver ..... 25 lbs.
Capacity of tank ..... 4½ gallons
Dimensions: Length 24"; width, 17"; back, 13" high; width of shelf, 6"; basin, 14½ x 11¼".



Receiver Patented July 11, 1911



THE COLONIAL one-piece vitreous china lavatory, with integral anti-splash rim oval basin, depressed soap dishes, shelf and reservoir, with china cover for filling and cleaning, and nickel plated retaining chain, for cover to prevent breakage, concealed rubber bound hangers, nickel plated self-closing push button supply faucet with nickel plated chain and rubber stopper and vitreous china receiver with concealed rubber protected hangers. Prices upon application.



Lavatory Patented { *July 11, 1911* / *Feb. 23, 1915*

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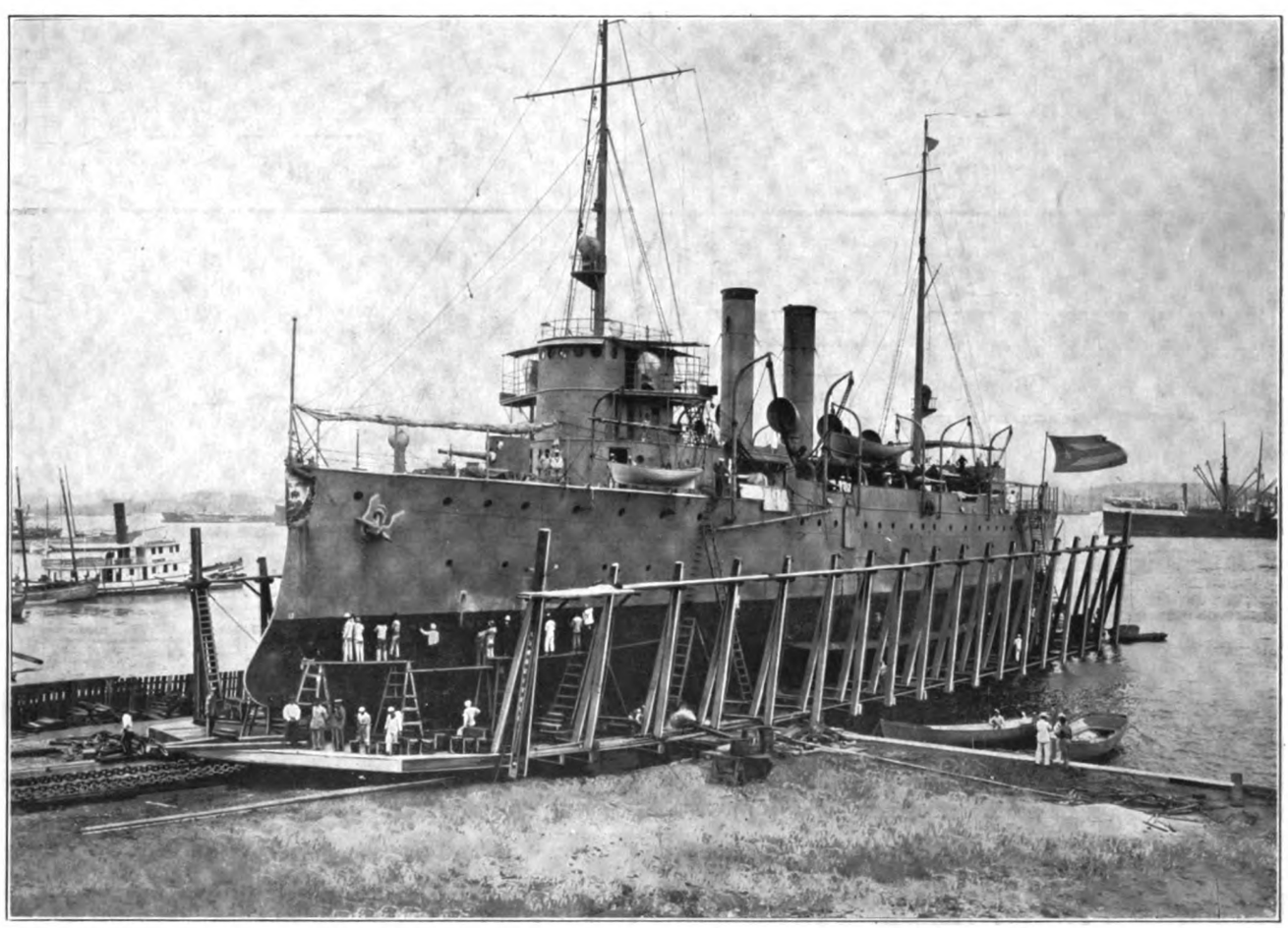

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International Marine Engineering

DECEMBER, 1915

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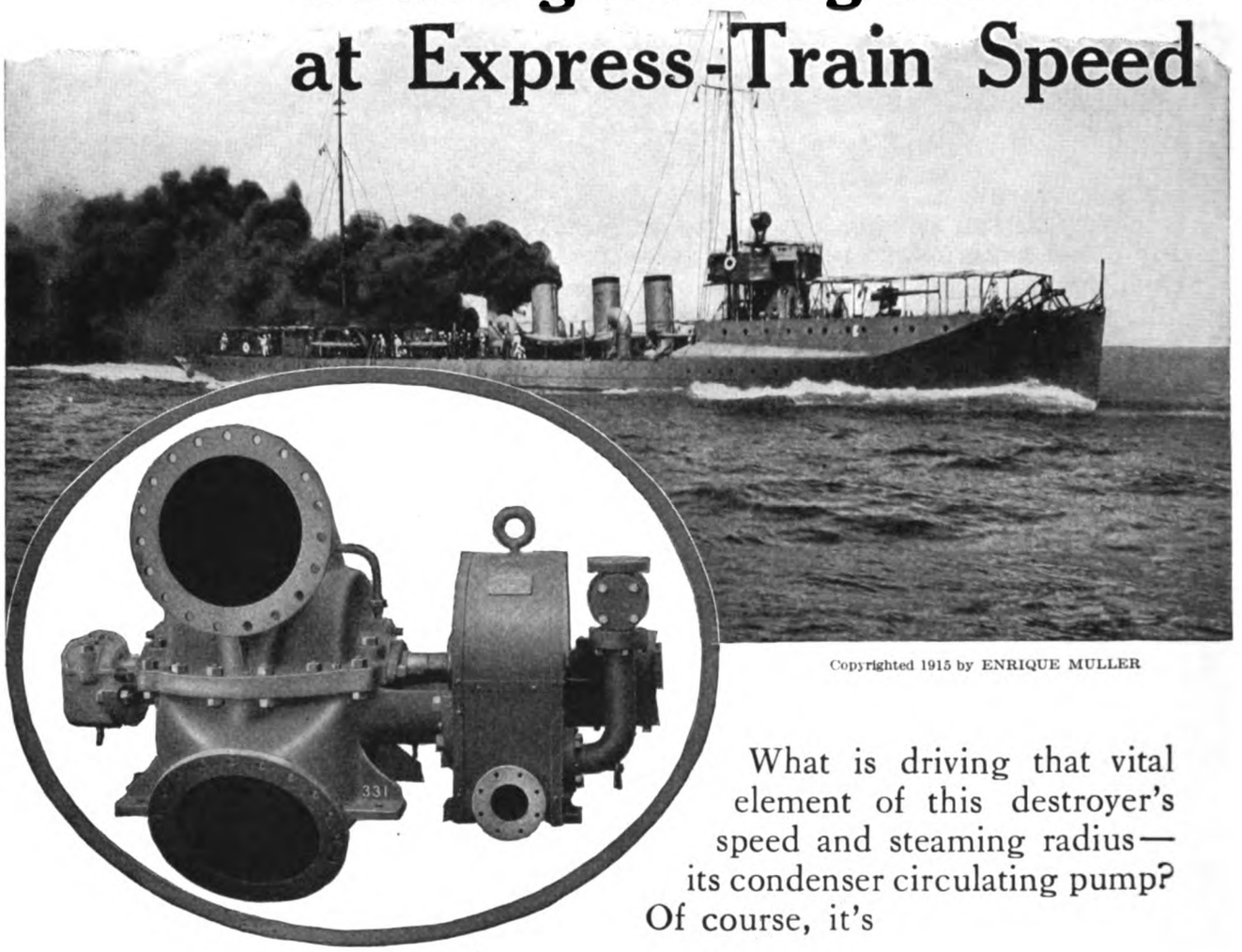

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What is driving that vital element of this destroyer's speed and steaming radius—its condenser circulating pump? Of course, it's

THE TERRY TURBINE

The photo shows one of the two Terry Turbine Pumping Sets each of 4800 gallons per minute capacity furnished the Bath Iron Works, Limited, for the U. S. Destroyer WADSWORTH, and is the latest type of many built for condenser circulating service.

Henry R. Worthington furnished the pump for this set, as well as for many others.

Terry Turbine sets are now being used aboard war ships and merchant vessels for not only condenser circulating service, but main dynamo condenser circulating, distiller circulating and main boiler feed pumps. In fact they are used just as on land for duty where continuous service is absolutely essential.

Write for Bulletin 163.

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AMERICAN MERCHANT MARINE

The title of this book is descriptive, but a more complete idea of the scope of the work may be obtained by reading the Table of Contents, which is as follows:

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Early Growth.
Evolution of the Smuggler and the Pirate.
Before the War of the Revolution.
Merchantmen in Battle Array.
Early Enterprise of the United States Merchant Marine.
French and Other Spoliations.
The British Aggressions.
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Privateers, Pirates and Slavers of the Nineteenth Century.
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"Link-Belt Silent Chain" is the title of Data Book No. 125 just published by the Link-Belt Company, Chicago, Ill. This is an exceptionally handsome volume of 110 pages, profusely illustrated. Among the uses to which the Link-Belt Company's silent chain may be put is for machine tool drives, in connection with which the following statement is made in the catalogue: "The driving force through a chain, positive but elastic, is equal at each instant to the force required to do the work at the rate of the feed and speed as set, meeting unflinchingly the requirements as they arise. A steady, uniform rate of work is the result. The deflections in the machine parts are held constant, and the tools cut away the metal, as opposed to the tearing and chattering that occur with the shock of high-speed gears, or with the creep and slip of leather belts. Numerous carefully made tests between belt-driven and chain-driven machines give the following average results in favor of the chain drive: Twenty percent greater output; 20 percent saving in power; from four to ten times the service is obtained on cutting tools, with the consequent saving in time of operator for grinding, resetting, etc.; better finish; less wear and tear on bearings and other rotating parts; larger and heavier work may be done on the same machine."

The Seabury watertube boiler, which is used by various departments of the United States Government, is described in Catalogue 10-A, published by the Boiler Department of the Gas Engine & Power Company and Chas. L. Seabury & Company, Con., Morris Heights, N. Y.

The latest publication issued by the Lagonda Manufacturing Company, Springfield, Ohio, is a 24-page bulletin on its triple-acting automatic cut-off valves and non-return valves. This book briefly but completely discusses the function of these valves, and illustrates the several types made by the Lagonda Manufacturing Company, which are the standard angle type and straight-way valve, the low,squat body valve for low head room and the horizontal valve. A copy of this bulletin will be sent to anyone on request.

Bulletin No. 60—The Richardson Model "T" Sight-Feed Oil Pump, recently issued by The Richardson-Phenix Compny. Milwaukee, Wis., contains much new information concerning the well-known Model "M" lubricator. Interesting illustrations show the process of manufacture from the raw material to the finished lubricators on the test rack, and give a good idea of the manner in which the pumps are drilled and milled from a solid block of cast iron. An interesting chapter on gas engine lubrication discusses the question of timing the admission of oil so that it is forced directly onto the engine pistons. Other items of interest are a description of the new Richardson air spray attachment; also the steam and electric attachments for heating the oil in the lubricator reservoir. A double-page illustration of the New York skyline shows that practically all important buildings in the metropolitan district are equipped with Richardson-Phenix lubricating appliances. Copies of the above bulletins may be had upon request from the Richardson-Phenix Company.

"Finding and Stopping Waste in Modern Boiler Rooms" is the title of a 68-page book devoted to the use and design of Cochrane meters, issued by the Harrison Safety Boiler Works, Philadelphia, Pa. The value of feed water and condenser meters as aids in the management of power plants is taken up in detail in the introductory part of the book, covering, among other factors, grade of fuel, grates, methods of firing, air leaks, control of draft, condition of gas passages, scale and soot on boiler tubes, radiation, etc. With a feed-water meter installed, it becomes possible to measure the effect of changes in connection with these several factors, the over-all efficiency and economy, and the means and ways of obtaining the desired result having been ascertained, the manager or engineer is in a position to insist upon good results continuously; that is, with facilities for continuous quantitative measurements and records as afforded by this apparatus, scientific management becomes easy and natural, and standard rules of operation, such as directions for handling fires, regulation of draft, blowing of soot, banking of fires, carrying overloads, etc., can be written out, so that any man following them can obtain good results. The use of records further arouses the ambition and spirit of emulation of the men, and makes it possible to reward special skill or attention to duty, as bonuses or promotions. In the subsequent sections of the book the Cochrane metering heater (combined open feed-water heater and hot-water meter), with its several modifications, is described in detail, as also the Cochrane flow recorder, for use in connection with V-notch weirs. In the last pages of the book of a new type of meter, working on the volumetric principle, by means of which it is said to be possible to obtain great accuracy, as within one-third of 1 percent, is described.

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Boiler rivets, structural, tank, ship and bridge rivets are described by the S. Severance Manufacturing Company, Glassport, Pa., in a bulletin the company has just issued.

Heavy plates. tank, flange and firebox, also blue annealed steel plates and sheets, are made by Alan Wood Iron & Steel Company, Widener building, Philadelphia, Pa.

Hydraulic tools and equipment of all sorts, such as accumulators, rivets, flanging presses, shears, punches, bulldozers, etc., are made by R. D. Wood & Company, 400 Chestnut street, Philadelphia, Pa., and are described in a bulletin the company has just published.

Boiler makers' tools and machinery, such as vertical and horizontal plate bending rolls, plate straightening rolls, plate planers, flanging clamps, and all types of punches, shears and riveting machines are described in a catalogue published by Wickes Bros., Saginaw, Mich.

Electric arc welding is described in an illustrated bulletin, B-4005, just published by the C & C Electric & Manufacturing Company, Garwood, N. J. According to the C & C Company, "When welded with a C & C outfit your seams will be continuous, uniform throughout and equal in strength to the metal of the sheet. Calking is entirely eliminated and joints may be either lapped or butted as required. Tanks welded with C & C arc welders may be tested to destruction without breaking out at the seams, and pressures of over 5,000 pounds have been applied to our welded joints without leakage or fracture."

"Modern Welded Pipe" is the title of a booklet which has just been issued by the National Tube Company, Frick building, Pittsburg, Pa. In reference to this booklet the National Tube Company makes the following statement: "We have recently issued a booklet, 'Modern Welded Pipe,' which treats of the manufacture, uses and characteristics of tubular products. While this book was not issued for general distribution, we will gladly send a copy to any person whose letterhead or activities would indicate a legitimate use. We will also send on request List No. 5, showing sizes, dimensions, trade customs and specifications."

"Dixon's Graphite Pipe Joint Compounds" is one of the articles published in the October issue of *Graphite,* issued monthly by the Joseph Dixon Crucible Company, Jersey City, N. J. Users of pipe joint compounds will be interested in reading this article, which we reproduce herewith: "The shipping clerk of the Dixon Grease, Paint & Lubricant Works made the remark the other day that it looked very much as though the foreign nations were eating Dixon's Graphite pipe joint compound, owing to the very large shipments that were being made. On looking up our records, we find that the shipping clerk's statement is not without foundation so far as the sales are concerned. Dixon's Graphite pipe joint compound has for the past few years met with a sale in foreign countries several times greater than it has enjoyed in the United States. Whether this is due to greater appreciation of its merits by foreigners, or to a more vigorous sales policy, we cannot say. Dixon's Graphite pipe joint compound is a material absolutely without an equal for putting together all threaded joints. Being much lighter and much greater in bulk than red lead or white lead, it is far more economical to use than either of those materials. Being a lubricant, it enables the pipe fitter to make a joint far tighter, as he can get a quarter or half turn more on his pipe with the graphite compound than he can get with lead compounds. It is also true that, due to the lubricating quality of the graphite compound, the work of the pipe fitter is much easier and he is less tired at night than when he is making use of other forms of compound. The Dixon Company itself makes a large use of its Graphite pipe joint compound. Whenever the engineer opens the B. & W. boilers, every header is coated with Dixon's pipe joint compound. This prevents leakage, prevents sticking, makes the work easier and prevents rusting. Dixon's Graphite pipe joint compound is a material that should be in use in every factory in the land. It should be used in all boiler works, gas companies and wherever there are ground flanges or threaded pipes to be joined. All threaded pipes that are put together with Dixon's Graphite pipe joint compound can be opened any time without fear of breakage or straining of tools."

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In the latest number of *Plymouth Products,* published by the Plymouth Cordage Company, North Plymouth, Mass., are a number of interesting photographs showing the use of Plyenough rope in towing jobs. One of these is described as follows: "Imagine a sunken coal barge of 3,000 tons, with its bow resting on bottom in 7 fathoms of water and its stern just barely afloat. Quite a load to haul inshore, you say. Yet jobs like this are all in the day's work of the Thames Tow Boat Company, of New London, Conn., and other such concerns. And uneventful enough, too, when Plymouth manila is used for the hauling. The sunken vessel in our illustration is the Philadelphia & Reading barge *Exeter.* She was sent to the bottom off Narragansett Bay by the steamer *Concord,* and when this picture was snapped was being hauled into shoal water by the New London tug *Paul Jones.* A bridle of 10-inch Plymouth manila was used. At one time during the haul three tugs were pulling together on the bridle and developing a total of 3,000 horsepower. Yes, the New London concern uses Plymouth exclusively."

The Ingersoll-Rand Company, 11 Broadway, New York, N. Y., has issued two new booklets, Forms 76 and 9201. Form 76 is an 80-page catalogue, subject "Water Lifted by Compressed Air." It is a very complete treatise on the Air Lift and explains in thorough detail the air lift system of pumping. To all those in any way interested in adequate water supply a copy of this booklet will be found invaluable, since it very intelligibly presents all the facts essential in analyzing a proposition involving the use of clean water in quantity. Form 9201 is a 128-page 6 x 9 catalogue on Calyx core drills. The principle function of the core drill is the determination of the character, order, thickness and extent of the materials beneath the earth's surface, by means of cylindrical cores which it extracts. In coal and metal mines, stone quarries, contract work or for canal or tunnel developments projected, the core drill is used and takes what is otherwise an unknown quantity and converts it into an absolute certainty. By determining the actual conditions in advance, it is a medium to save thousands of dollars in machine equipment, underground workings, etc., that might otherwise be expended only to find a barren property. Booklet is illustrated, gives size and capacities of the different types and shows the apparatus in operation in the various fields.

"The Cost of Pumping Water" is the title of a collection of graphical charts, with accompanying explanatory text, issued by the De Laval Steam Turbine Company, Trenton, N. J. The object of the publication is to facilitate computation of the over-all economy of different types of steam pumping units, having given the cost of fuel, steam pressure, rate of interest, cost of apparatus and other variables. The first chart shows the number of British thermal units represented by each pound of steam for various combinations of superheat, steam pressure and feed-water temperature. The second chart gives the cost of 1,000 pounds of steam and the cost of a million British thermal units in the steam from the cost of coal per ton, the heat value of the coal and the boiler efficiency. The third diagram shows the relation existing between the average cost of steam-turbine-driven centrifugal pumping units and the head pumped against. The fourth diagram shows the amount of money to be set aside yearly for sinking fund, to cover depreciation for different terms of life and rates of interest. The fifth diagram is the well-known Mollier steam chart, supplemented by a convenient scale, by means of which British thermal units available per pound between given limits, the resulting velocity of steam in feet per second, and the corresponding duty in foot pounds per 1,000 pounds of steam, and the pounds of steam per horsepower-hour may be read off directly. The sixth diagram is an alignment chart for determining the resistance of pipes to flow of water. Three scales represent gallons per minute, diameter of pipe in inches, and loss of head in feet per 1,000 feet of pipe. A straight edge laid across points corresponding to known figures on two of the scales, shows the third variable by intersection with the remaining scale. At the end of the publication a list of representative municipal installations of De Laval steam-turbine-driven centrifugal pumps, from which it is to be observed that units of this type have been installed for capacities as large as 100,000,000 gallons per day and heads as great as 334 feet, and have developed duties exceeding 150,000,000 feet-pounds per 1,000 pounds of steam. It is also pointed out that because of the low first cost of apparatus, foundations and buildings inherent in this type of pump, the total cost of pumping water is greatly reduced as compared with the much larger, heavier and more expensive triple-expansion reciprocating pumping engines, in spite of the somewhat higher duty exhibited by the latter. Copies of the publication are offered gratis to those interested.

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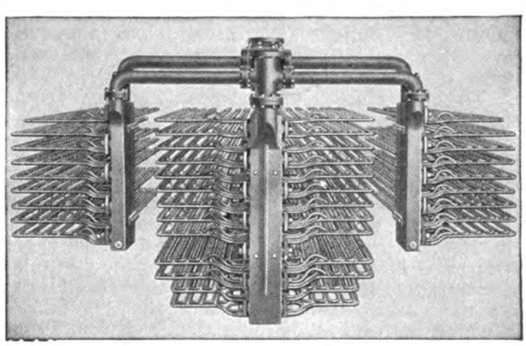

5. It results in a saving of fuel over saturated plants, both operating under the same draft conditions, of 10% to 20%.
6. It reduces the maintenance costs by the prevention of water hammer, leaky flanges and condensation in the cylinders.
7. It does not prevent rapid, thorough and frequent cleaning of the tubes.
8. Its construction provides easy access to all screwed joints and the easy removal of the parts.

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"Thor" pneumatic and electric tools are described in a circular just published by the Independent Pneumatic Tool Company, 1307 Michigan avenue, Chicago, Ill. In this circular ten features of "Thor" tools are given as follows: "Corliss valves, roller bearings, telescopic screw feed, removable crank chamber plate, cast steel casing in two parts, and protected valves in air drills; ball and roller bearings and special powerful motor in electric drills; one-piece drop-forged barrel and handle in long-stroke riveting hammers, and new single valve in chipping and calking hammers. The 'Thor' line consists of piston air drills; reversible flue rolling, reaming, tapping and wood-boring machines; close-quarter drills; grinders; pneumatic riveting, chipping, calking and beading hammers; staybolt drivers; pneumatic holders-on; hose and hose couplings; rivet sets and electric drills."

"Salesman-Ship" is the publication issued by the Columbian Rope Company, Auburn, N. Y. From it we take the following: "So many of our friends have spoken of the value of the educational articles which have appeared in *Salesman-Ship* since its inception, that we are going to suggest making your copies into a permanent reference library. To enable all of you who are interested in the study of rope and twines, the fiber used in their manufacture and the method of manufacture, we are offering a binder which can be very easily used for binding a year's issue of our *Salesman-Ship*. Bind your copies of *Salesman-Ship* and make them a permanent source of information. You will find that it is a very excellent way to make sure of retaining copies of all issues for reference purposes. Beginning with the September issue, *Salesman-Ship* was punched with two small holes on the left-hand binding margin, which will enable you to insert them quickly and evenly. The value of this information to you is certainly worth a whole lot more than the price that we have placed on this binder. They will be furnished to any of our friends who wish them for 25 cents each, containing all issues of *Salesman-Ship* up to date. You had better get one *now* while we have an ample supply. Send 25 cents by money order or in postage stamps."

BUSINESS NOTES

ANNOUNCEMENT.—The Sprague Electric Works of the General Electric Company has recently opened a sales office in the Provident Bank Building, Cincinnati, Ohio, under the management of Mr. Frank H. Hill. The Cincinnati office has been established to facilitate the prompt and efficient handling of the increasing business in that section.

LATE SALES of the Brunswick Refrigerating Company, New Brunswick, N. J., are as follows: To Wm. Cramp & Sons, three 2-ton plants, two for the steamers of the Sun Company, now being built, and one for the Petroleum Transport Company's steamer, now being built. This is the third Petroleum Transport steamer to be equipped with Brunswick apparatus. Through the Newport News Shipbuilding & Dry Dock Company orders were received for two 1-ton plants for the Crowell & Thurlow steamers, now being built at Newport News. There are now seven Crowell & Thurlow steamers equipped with Brunswick apparatus. Orders have been given by the New York & Porto Rico Steamship Company for equipping three of their steamers now in service. The plants are installed while the boats are in port between trips, and it is not necessary to delay the sailing of the vessel any while the plant is being put on. The Clinchfield Navigation Company has placed orders for ½-ton plants for their steamers *Clinchfield* and *International*. The Vacuum Oil Company has ordered a 1-ton plant for their steamer *Gargoyle*. Richard Howe has had his yacht *Natoma* equipped with a ½-ton Brunswick plant, cooling two refrigerators. The compressor is operated by a kerosene engine geared to the compressor. In case steam is not always handy, it is possible to use a kerosene or gasoline engine. The Gulf Refining Company has recently placed an order for equipping the steamship *Ligonier* with a 2-ton plant for cooling refrigerators and cooling drinking water. A 2-ton plant was installed on the sister ship *Larimer* a short time ago, and has worked out so satisfactorily that the order for the *Ligonier* has been placed. Data regarding Brunswick marine refrigerating, ice-making and water-cooling plants will be gladly furnished on request by addressing the Brunswick Refrigerating Company, Marine Department, New Brunswick, N. J.

W. R. HAYNIE, manager of Bolinders Company, 30 Church street, New York, the American office of J. & C. G. Bolinders, Ltd., Stockholm, Sweden, has sailed for Stockholm, to be gone about six weeks. Referring to his trip, Mr. Haynie writes INTERNATIONAL MARINE ENGINEERING as follows: "I am making this trip at the present time with a view of increasing the facilities for delivering the Bolinder marine oil engines in America, where the demand is increasing so rapidly that it is hard to keep up with deliveries. This carries out the position taken by me years ago, which I have stuck to throughout several years of constant effort, viz.: The United States is producing 80 percent of the oil of the world; it is, therefore, the market for oil engines, and in course of time the American industrial interests will realize the value of and adopt the methods—long since in use in Europe—of considering economy before first or initial cost of equipment, meaning that it frequently justifies the owner of a ship or power plant to pay double the initial price for machinery in view of the fact that the economy of the higher cost machinery will more than save itself in total cost within several years' operation."

CUMMINGS DIRECTION INDICATOR

One Pipe and No Valves

THIS is operated by means of pressure or vacuum produced by a small pump connected to the propeller shaft. For rotation forward, the vanes within this pump produce a partial vacuum throwing the pointer into the "ahead" position. When the shaft is reversed, the vanes of the pump produce a definite pressure within the pipe leading to the indicator, thus throwing the pointer into the "astern" position. As soon as the shaft comes to rest, the indicator returns to zero.

SEND FOR CATALOG.

Cummings Ship Instrument Works

110 High Street, Boston, U. S. A.

MARTEN-FREEMAN COMPENSATING DAVIT

Being specified by leading Marine Architects and installed by representative AMERICAN SHIPBUILDERS and SHIPOWNERS

Six Standard Sizes to meet all usual conditions

ROBERT BRUCE STEWARD
17 Battery Place New York

Modified types designed to meet special conditions

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HELP AND SITUATION AND FOR SALE ADVERTISEMENTS

No advertisements accepted unless cash accompanies the order.

Advertisements will be inserted under this heading at the rate of 4 cents (2 pence) per word for the first insertion. For each subsequent consecutive insertion the charge will be 1 cent (½ penny) per word. But no advertisement will be inserted for less than 75 cents (3 shillings). Replies can be sent to our care if desired, and they will be forwarded without additional charge.

Salesman, aged 28, with nine years' experience in yacht, commercial, vessel brokerage and marine products, wants position. Is well acquainted among shipyards. Address *Salesman,* care of INTERNATIONAL MARINE ENGINEERING, 17 Battery Place, New York.

For Sale—One Knowles Independent air pump and jet condenser, in A-1 condition, size, 10 x 14 x 18. Price, $200. Address *Lake Champlain Transportation Company,* Whitehall, N. Y.

Mechanical Engineer and practical hull constructor competent to take charge of engine or hull department would like to connect with ship or boat building firm desirous of building their own oil engines. I have invented and perfected a marine oil engine suitable for large and medium units. This engine is the outcome of twenty years of experimenting and is developed on different principles from those at present on the market. It starts and controls like a steam engine even as a single cylinder unit without special starting gear and with load on using the low grade fuels. Address **Box 75,** care of INTERNATIONAL MARINE ENGINEERING.

WANTED

Three bright and loyal young men with combined capital of $15,000 to take charge of the production and selling ends of The Motsinger Rotary Engine Company. Experiments are over, and plant on R. R. siding worth $20,000 and free of debt is ready to run. Undoubted large market is ready for these fine economic engines designed for high pressure marine service. You can name your own salaries consistant with the finances and successful growth of the business. Answer if you have as much as $5,000 of ready money and bring undoubted good references, and come and investigate this proposition in person. No better fundamentally protected proposition can be found.

Address N. H. Motsinger, President, Fredonia, Pa.

WANTED

Complete sets of INTERNATIONAL MARINE ENGINEERING for the years 1910 and 1913; or bound volumes of both years in good condition. Write us, stating price asked.

International Marine Engineering

17 BATTERY PLACE, NEW YORK

NELSON VALVES at the Panama-Pacific Exposition. The Nelson Valve Company, Philadelphia, Pa., has on display at the exposition an exhibit of valves which has attracted very favorable attention. Its most striking feature is a large revolving black velvet-covered display stand, on which has been arranged a comprehensive assortment of brass valves of various kinds. Included among them are gate, globe, angle, swing check and non-return valves. They have been mounted, so as to afford an excellent opportunity for a close and detailed examination of every feature. In addition a number of sectioned valves of each kind are displayed, so that the internal design may be more easily explained.

MARINE SOCIETIES.

AMERICA.

AMERICAN SOCIETY OF NAVAL ENGINEERS
Navy Department, Washington, D. C.

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS
29 West 39th Street, New York.

NATIONAL ASSOCIATION OF ENGINE AND BOAT MANUFACTURERS
29 West 39th Street, New York City.

UNITED STATES NAVAL INSTITUTE
Naval Academy, Annapolis, Md.

AMERICAN ASSOCIATION OF MASTERS, MATES AND PILOTS
National President—John H. Pruett, 423 Forty-Ninth St., Brooklyn, N. Y.
National Treasurer—A. B. Devlin, 21 State St., New York.
National Secretary—M. D. Tenniswood, 308 Vine St., Camden, N. J.

THE AMERICAN SOCIETY OF MARINE DRAFTSMEN
President—J. Emile Schmeltzer, 221 Cumberland street, Brooklyn, N. Y.
Vice-President—H. A. Hope, Newport News S. B. & D. D. Co., Newport News, Va.
Secretary—B. G. Barnes, 40 Faxon avenue, Quincy, Mass.
Treasurer—P. K. Thurston, Navy Department, Washington, D. C.
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President—A. Bruce Gibson, 17 State street, New York.
Secretary—Geo. A. Grubb, 1040 Dakin street, Chicago, Ill.
Treasurer—A. L. Jones, 38 Avery avenue, Detroit, Mich.

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GRAND COUNCIL, N. A. OF M. E. OF CANADA
Grand President—L. B. Cronk, Windsor, Ont.
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Grand Secretary-Treasurer—Neil J. Morrison, P. O. Box 288, St. John, N. B.

GREAT BRITAIN.

INSTITUTION OF NAVAL ARCHITECTS
5 Adelphi Terrace, London, W. C.

INSTITUTION OF ENGINEERS AND SHIPBUILDERS IN SCOTLAND
39 Elmbank Crescent, Glasgow.

NORTHEAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS
Bolbec Hall, Westgate Road, Newcastle-on-Tyne.

INSTITUTE OF MARINE ENGINEERS, INCORP.
The Minories, Tower Hill, London.

"LEA" V-NOTCH METER in operation at Yarnall-Waring Exposition Exhibit. One of the interesting exhibits in the Palace of Machinery, at the Panama-Pacific Exposition, is that of Yarnall-Waring Company, Philadelphia, Pa. At the front of the exhibition space is a full-sized working "Lea" V-Notch recording liquid meter. Recording instrument, float and V-notch are all complete, as is also the tank, with the exception of the top, which has been removed. Ingenious arrangements have been made, so that the actual operation of the meter may be followed through from start to finish. A centrifugal pump operates the apparatus. It lifts the water to the chamber in front of the V-Notch weir, over which it must pass to be metered. An electric light has been placed under the flow of water over the V. Another light has been placed in the instrument case above the tank, where the recording pen traces the amount of flow over the weir on a chart. An observer may stand in front of the case, and by operating a valve controlling the amount of flow over the weir, watch the action of the recording instrument, just as though it were under actual working conditions.

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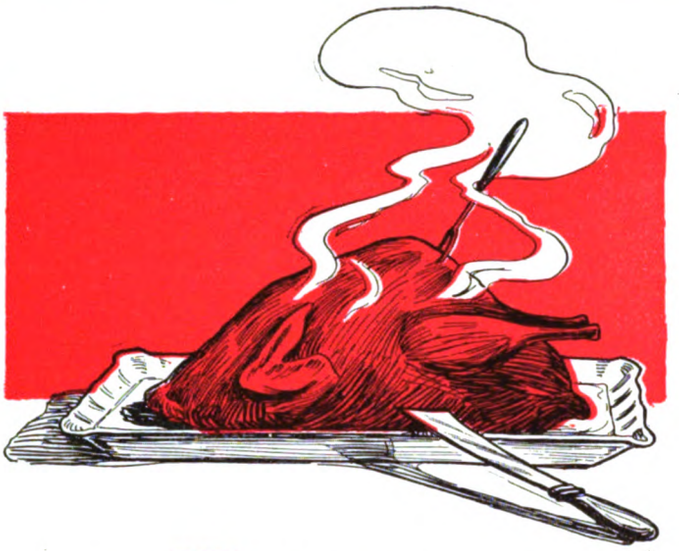


LOOKS GOOD

doesn't it—

and it's "dollars to doughnuts" it *tastes* good.

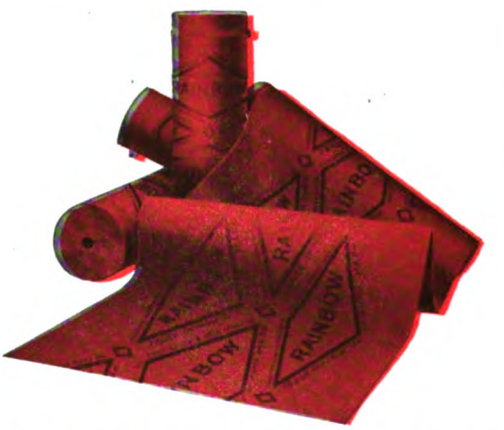
That is—IF YOU (the Engineer at So & So's Plant) will get the chance to *taste* it; but—if you *must* spend Thanksgiving tinkering around some sizzling, spitting, steam joint, making everlasting repairs, even the drumstick, *saved for Dad*, won't taste *good.*

You've heard this before—it's an "old joke with a new leather washer"—picturing Dad, the Engineer, *losing his holiday*, eating a "cold snack" on account of using inferior packing, valves, etc., etc. It's an overworked, threadbare gag; but—come to think about it—there's much truth in it, unless, of course, you use PEERLESS PACKINGS.

IF YOU use Peerless Packings it's *not* necessary to tell you of their reliability, of their long life and superior service, also of their being the most imitated lines on the market.

If YOU do not use them, why not get acquainted with our goods—and us.

We have a "right-at-home" packing for every service condition under the Sun, no difference what nor where



RAINBOW—the "Turkey RED" sheet, for any joint, any pressure. The ONE packing that never makes Engineers lose their holidays or Sundays.

PEERLESS RUBBER MFG. CO.

31 Warren St. NEW YORK

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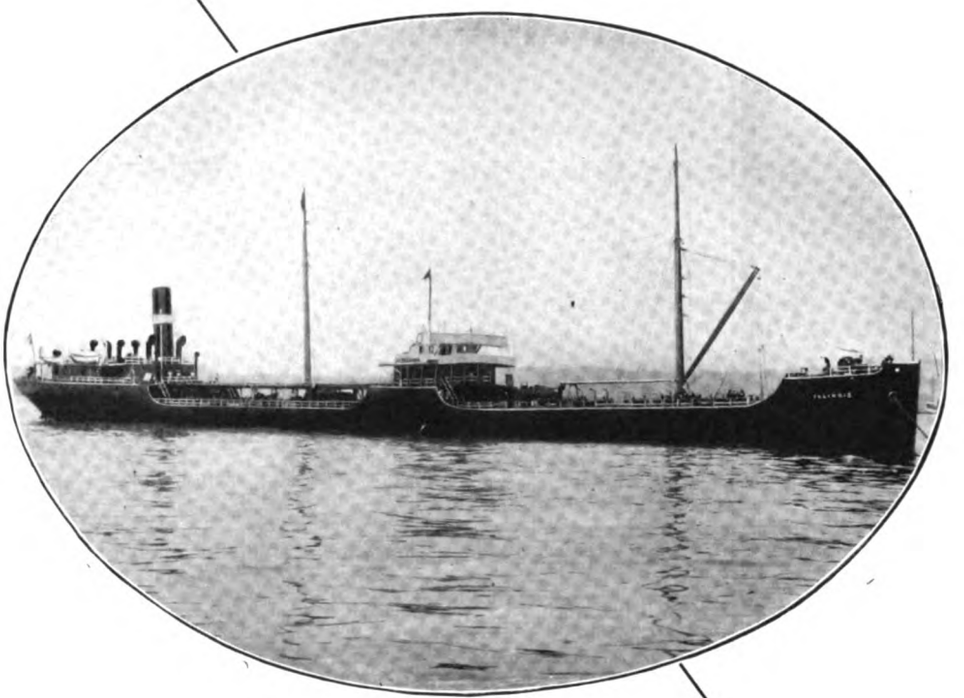
BRUNSWICK

Marine Refrigeration

makes it possible to carry ship's stores and perishable cargo of any kind for an indefinite period without loss.



Texas Co. S. S. Illinois

To get rid of the delay, muss, expense, and inefficiency of icing,
—to insure dry refrigerators, and even temperatures much lower than is possible with ice,
—to furnish ice cold drinking water,
—to make any quantity of ice for table and other uses if necessary,
—install a BRUNSWICK marine refrigerating plant,
—costs little to install—pays for itself in a very short time—complete installation occupies little space.

Brunswick Refrigerating Co.
Marine Department
NEW BRUNSWICK, N. J.

11
TEXAS
COMPANY
VESSELS
are equipped with
BRUNSWICK
Refrigerating
Plants

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"Watch the Thermometer"

A Sick Boiler Means A Sick Ship—

Your Steamer's Boiler is Your Steamer's Heart
And a boiler that's not functioning properly *is* sick.

Because of anatomical features peculiar to it, the Scotch type of boiler is subject to a most damnable functional disorder: POOR CIRCULATION.

This disease is pernicious, insidious and—deadly. It has been the hidden cause of many an internal trouble for which it has escaped the blame. Through the agency of its own secret accomplices (and hiding behind them) it begins its work of hindrance and destruction with the boiler's *first* breath—and hastens its *last*. And from the first, the health of the boiler is impaired, its usefulness diminished; before long it becomes a chronic invalid, requiring much careful nursing and expensive nourishment to get *half* the work out of it that a *healthy* boiler would do *without* such pampering and expense.

Eckliff Automatic Boiler Circulators

Much doctoring and surgery have been resorted to in an effort to alleviate the weakening and destructive conditions which inevitably follow poor circulation. Various stimulants, injections and drugs have been administered, and cutting and tinkering done—but it's an endless job—and it doesn't reach the *source*. It doesn't *cure* the disease—but *perpetuates* it.

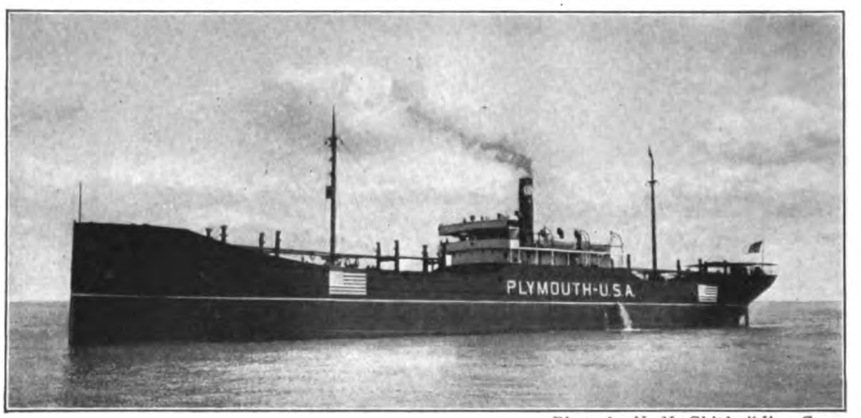

Photo by N. Y. Shipbuilding Co.

The "Plymouth" is one of the Coastwise Transportation Co.'s eight new steamers equipped with Eckliffs. Twenty-five Coastwise boilers now equipped.

Doctoring evil *effects* doesn't eliminate evil *causes*. Calking leaky seams and replacing broken stays doesn't lessen boiler strains. Chemicals that dissolve scale will eat steel. Forced fires only aggravate and intensify the troubles—and waste good fuel; sending more heat *up* doesn't appreciably increase water temperatures *below* the grates.

Create and Maintain Perfect Circulation

No wonder Scotch Boilers are below par during life and become old, pitted, grooved, and furrowed before their time! *You* would if you were dosed and nursed all your life because of weak and faulty circulation.

Now, all this doctoring of symptoms, this resorting to temporary and doubtful expediencies, is *foolish* and *costly*. Every Scotch Boiler *can* have sure and *perfect circulation*. There's *one Specific*—and that's the Eckliff Automatic Boiler Circulator. Are *you* nursing any sick boilers? If so, just give one of them the Eckliff treatment—and watch the results. It has already restored many a weak and inefficient boiler to robust health and vigorous power. We have ample testimony and proof—get them, and

GET CIRCULATION!

Eckliff Automatic Boiler Circulator Co.

46 Shelby Street, Detroit, Mich.

NEW YORK OFFICE: Singer Building **PHILADELPHIA OFFICE: Bullitt Building**

Eckliff Circulators are fully protected by U. S. and foreign patents.

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"Watch the Thermometer"

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JOHNS-MANVILLE SERVICE

JOHNS-MANVILLE SERVICE COVERS THE CONTINENT

THIS emblem is more than a trade-mark device. It stands for the experience, ability and business integrity of a long-established house. So that any article upon which it appears is not merely offered for sale; it is meant to give service. And that every J-M Product shall give this service fully and permanently, is the whole meaning of J-M Responsibility.

The principle of a Stillson Wrench illustrates the action of J-M Sea Rings on an engine rod.

A Stillson only grips on "one turn" or stroke, so do sea rings on an engine rod. Note how the steam pressure acts against the hollow space shown in the sectional view and how the flexible lip of the ring is forced against the rod. Just as soon as the steam pressure falls the pressure of the lip on the rod decreases.

If you figure out the saving that this makes, you will find that there is just one quarter the wear, one quarter the friction or power lost, few renewals and long life.

J-M Sea Rings will more than pay their own way in your plant. Why not try them out?

The water back of J-M Duplex never gets by. In other words—this packing doesn't leak.

There are only two ways that water can get by a piece of rod packing —past it or through it. If the packing is resilient enough water can't get past it and if it's made like J-M Duplex water can't get through it. Note the large rubber core and layers of cement that make the packing resilient.

Then see how these layers of cement hold back seeping water.

This is why Duplex-packed water boxes are leak-proof.

If you want a surprise on packing life try J-M Duplex.

You'll get tired waiting for it to wear out.

J-M Duplex

H. W. JOHNS-MANVILLE COMPANY

Akron	Boston	Columbus	Duluth	Kansas City	Minneapolis	Philadelphia	St. Paul	Toledo
Albany	Buffalo	Dallas	Galveston	Los Angeles	Newark	Pittsburgh	Salt Lake City	Washington
Atlanta	Chicago	Dayton	Houghton	Louisville	New Orleans	Portland	San Francisco	Wilkes-Barre
Baltimore	Cincinnati	Denver	Houston	Memphis	New York	Rochester	Seattle	Youngstown
Birmingham	Cleveland	Detroit	Indianapolis	Milwaukee	Omaha	St. Louis	Syracuse	

THE CANADIAN H. W. JOHNS-MANVILLE CO., LTD., Toronto, Winnipeg, Montreal, Vancouver

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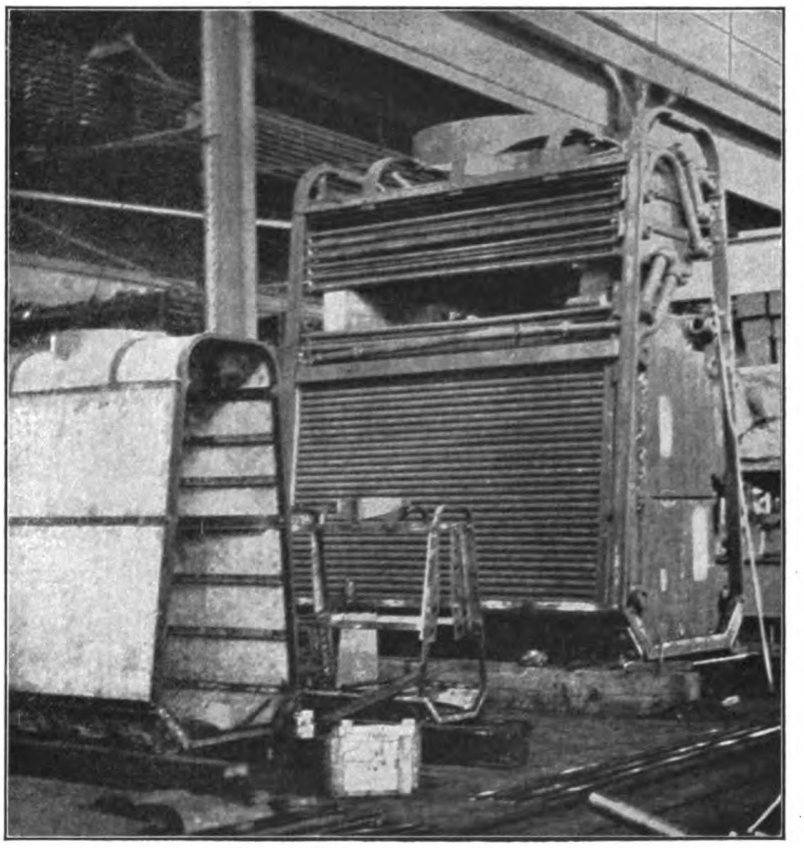
TALBOT

Steam Power Plants



THE accompanying illustration shows a 150 horsepower, a 50 horsepower and a 1,000 horsepower boiler under construction at our works at Olean. A copy of test of 150 horsepower (engine horsepower) at one-half its maximum power under forced draft was published in last month's advertising. The 1,000 horsepower boiler shown is being installed in one of the Pennsylvania Railroad Company's tugs. A similar boiler is being built for a high-speed yacht. the details of which will be given at a future date. We have many other sizes under construction and ordered at the present time, from 50 horsepower to a thousand. Tests and a number of years of service have shown Talbot Boilers to cost less per horsepower year than any on the market. They weigh less, occupy less space, are more durable, and are absolutely safe, require no lay-up or cleaning periods, and combined with one of our 4-cylinder engines will operate for less than any other type of steam or heavy oil engine, therefore they are ideal, because of their compactness, light weight and durability for shallow draft barges, auxiliary sailing vessels, tugs, as well as pleasure and fishing vessels, submarines and stationary uses where fuel-oil is available.

TALBOT BOILER COMPANY

120 LIBERTY STREET NEW YORK CITY

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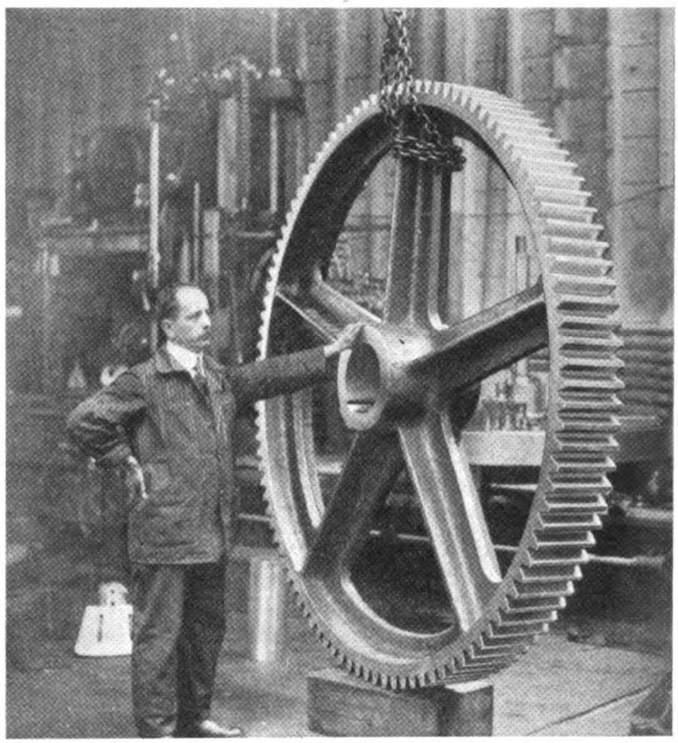
Main Steering Gear for the U. S. Battleship PENNSYLVANIA

Cut for the Newport News Shipbuilding & Drydock Co.

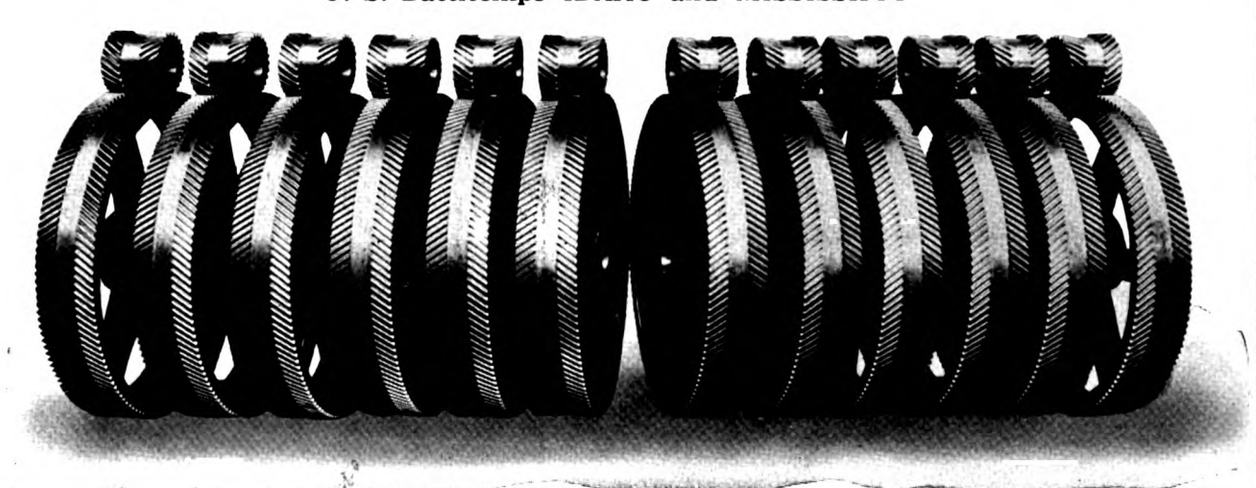


THE UNITED STATES GOVERNMENT is very particular about the accuracy of workmanship on a steering gear for a battleship. The specifications read in part as follows: **"Teeth to be cut with the least practical amount of clearance. A sheet metal template of the teeth covering at least two teeth spaces must be furnished with the gear for the use of the inspector and the template must fit every tooth for its full width with a clearance not exceeding 2-1000 inch in any one place."** When it is considered that the gear illustrated has 104 teeth, is nine inches wide and has a pitch diameter of approximately seven feet, the difficulty of complying with this requirement is apparent. Some of the best known manufacturers of gears in the country maintained that it was practically impossible. We do not ordinarily cut spur gears, but to demonstrate the accuracy of our work we took the contract and executed it so as to comply absolutely with the specifications and the inspection of the Navy Department. In fact, we bettered the requirements by a considerable margin. If you have a difficult job where accuracy is absolutely necessary, 'Economy' gears will fill the bill.

KERR TURBINE COMPANY, Wellsville, N. Y.

Turbo Generators, Turbo Pumps, Turbo Blowers, Reduction Gears

Twelve sets of 'ECONOMY' Herringbone Reduction Gears for the air compressors on the U. S. Battleships IDAHO and MISSISSIPPI



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G-E MOTOR OPERATING DREDGES

G-E MOTOR OPERATED LIFT BRIDGE

Port Adjuncts Safely and Reliably Operated by G-E Motors

Protect the lives and property of those dependent on the reliable operation, of harbor and port mechanical devices.

Dredges, elevators, dry docks, fire tugs, bridges, freight handling machinery, etc., are being safely and reliably operated by G-E motors. Maintenance cost has been greatly reduced wherever G-E motors have been used.

Entire sections of the waterfronts of leading cities in the United States and Canada have been electrified by the General Electric Company.

Let our specialists make a proposition to fit your requirements.

General Electric Company

General Office: Schenectady, N. Y.

ADDRESS NEAREST OFFICE

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For Michigan business refer to General Electric Company of Michigan, Detroit.
For Texas, Oklahoma and Arizona business refer to Southwest General Electric Company (formerly Hobson Electric Co.), Dallas, El Paso, Houston and Oklahoma City. For Canadian business refer to Canadian General Electric Company, Ltd., Toronto, Ont.

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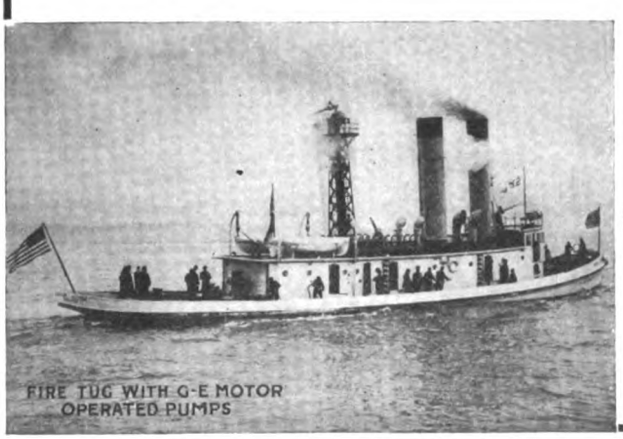
FIRE TUG WITH G-E MOTOR OPERATED PUMPS

FERRY BOAT LIGHTED BY MAZDA LAMPS

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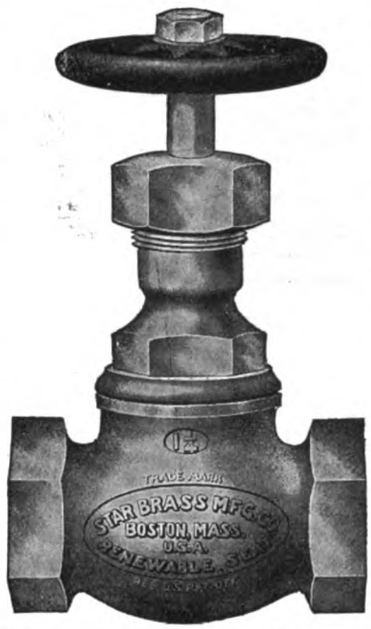
The "Renewable"

EXTRA HEAVY GLOBE MARINE VALVE



The most modern and thoroughly up-to-date globe valve at present on the market. By far the best globe valve for marine service yet produced, it being particularly adapted for high pressures, also for general severe marine work.

SOME OF OUR SPECIAL FEATURES ARE ENUMERATED BELOW:

All castings of our special bronze mixture, made from metal patterns on pneumatic molding machines.

All parts made with special tools, insuring absolute uniformity.

Body of special rugged design; steam is not retarded in its flow owing to body's form—it is so designed that metal is distributed where most needed for severe use.

Seat and Disc are both Renewable and extra heavy; the bevel or taper of both is at a sharp angle, with a very light bearing, insuring less liability of foreign matter lodging on seat when valve is closed, also less chance of wire drawing and cutting.

Seat rings are of a "Patented" form with special taper seat where screwed in body. This design insures a perfect joint and absence of liability to distortion from lack of care in installation or unequal expansion in use.

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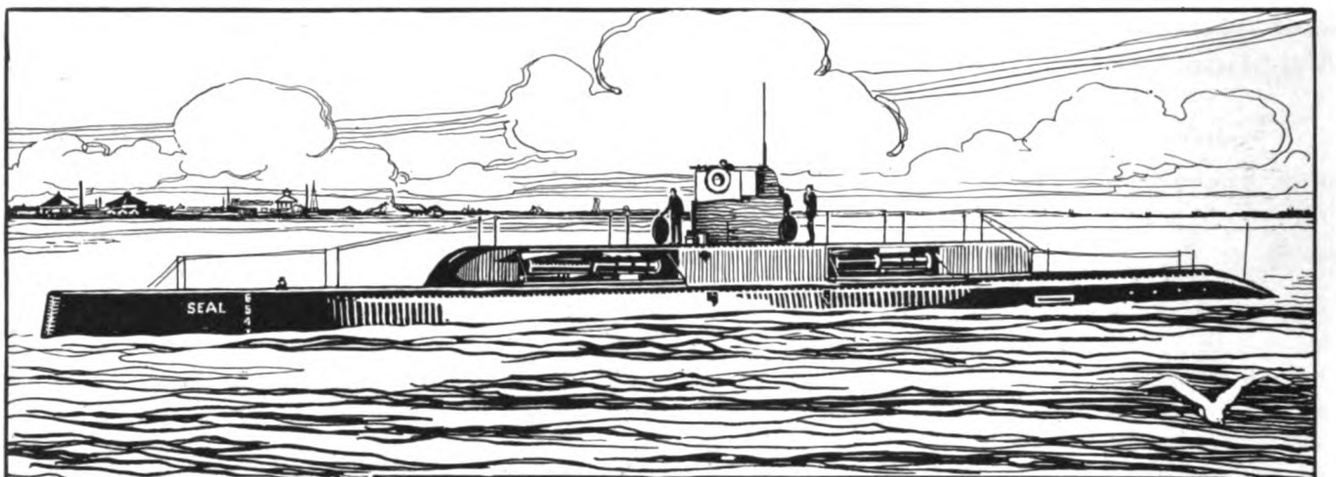

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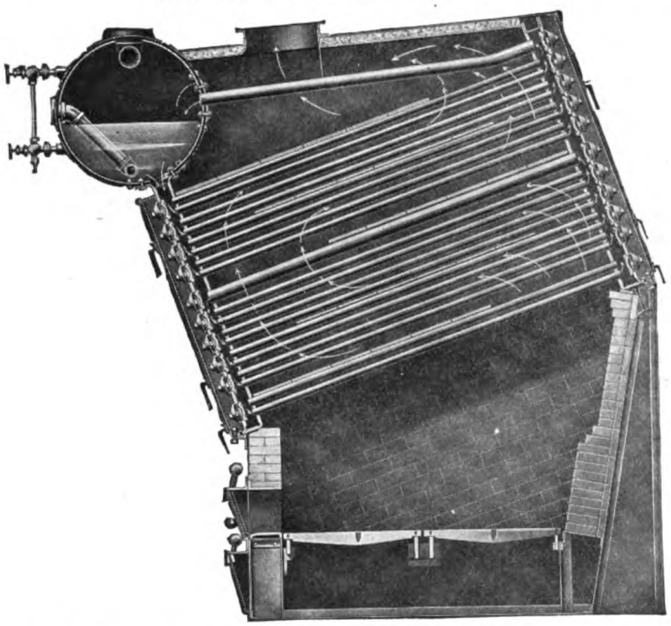

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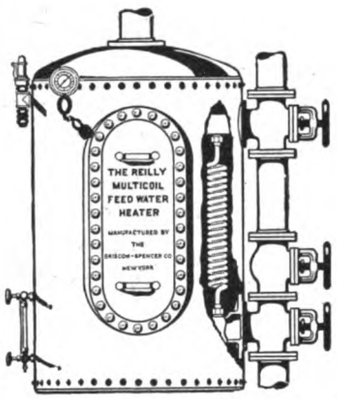

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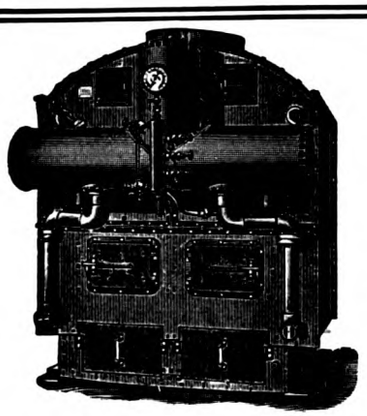

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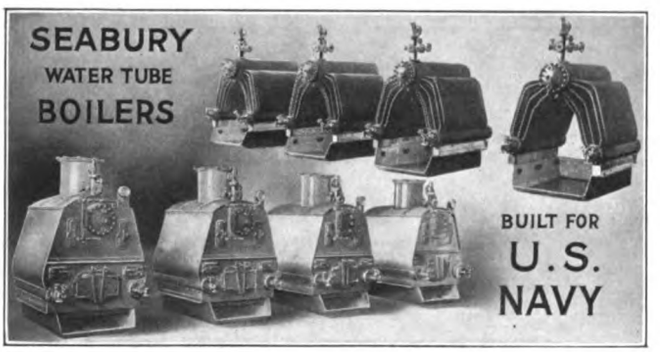

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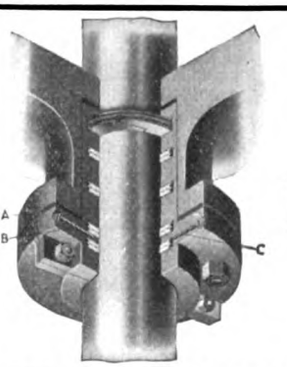

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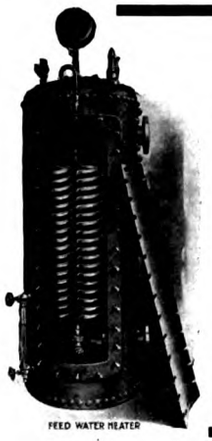

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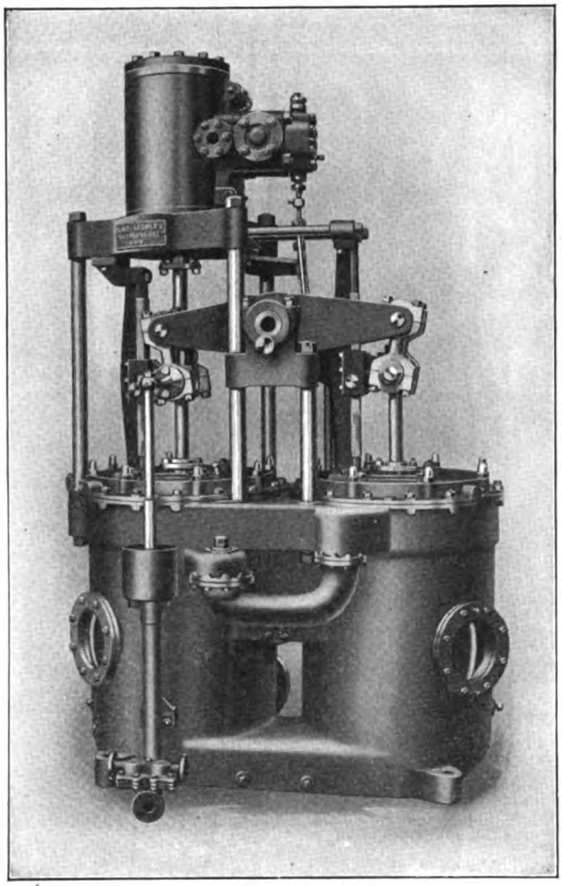

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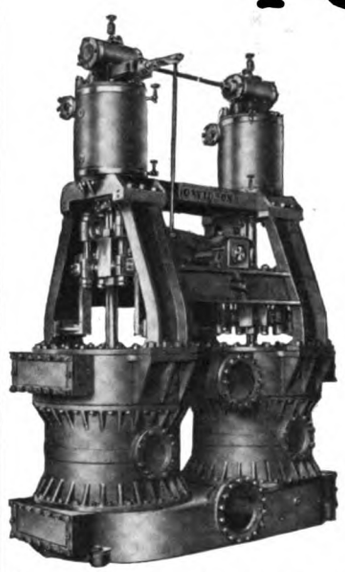

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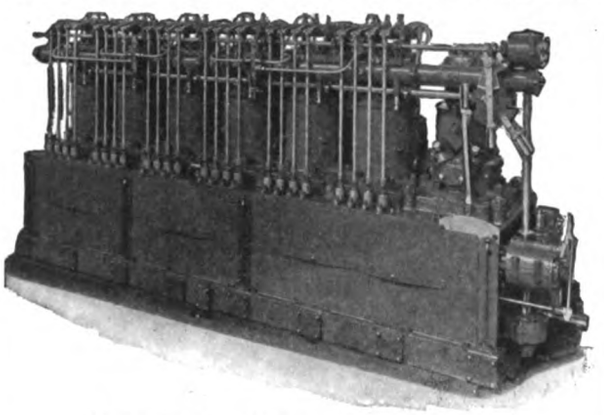

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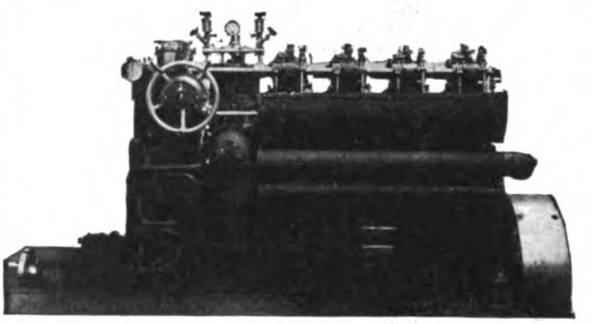

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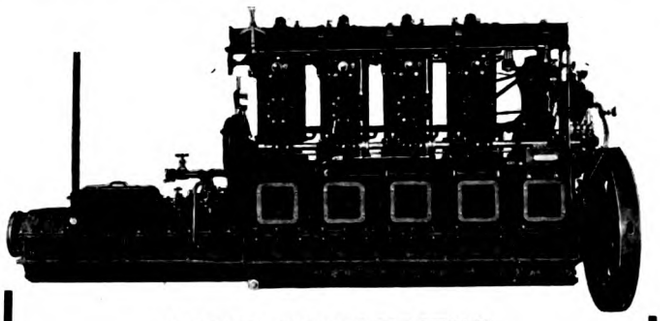

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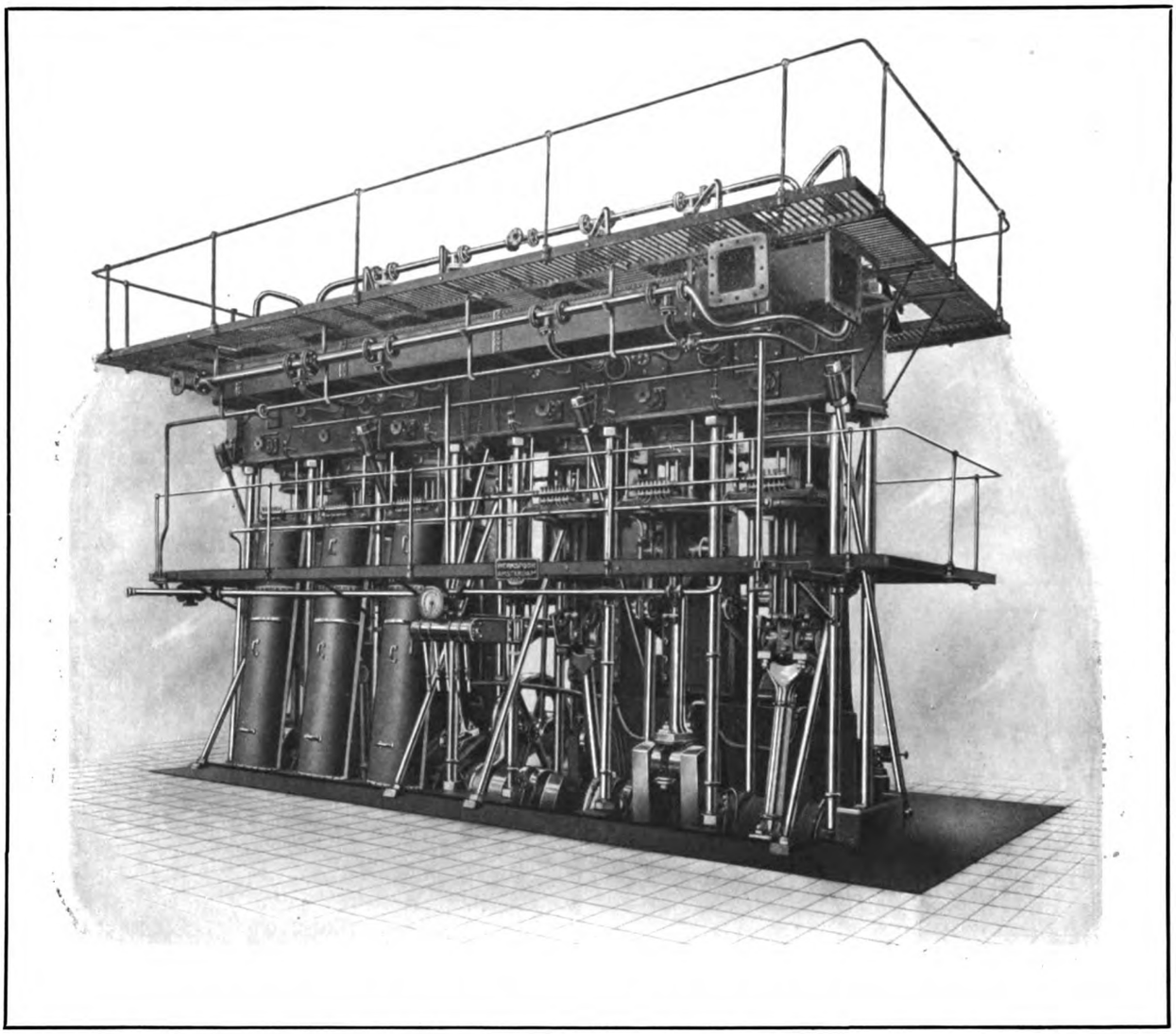

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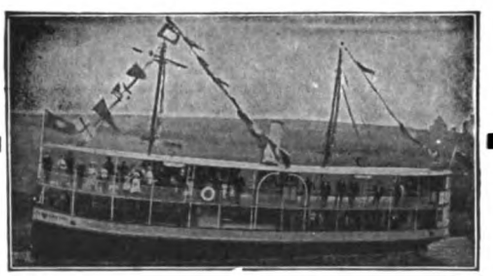

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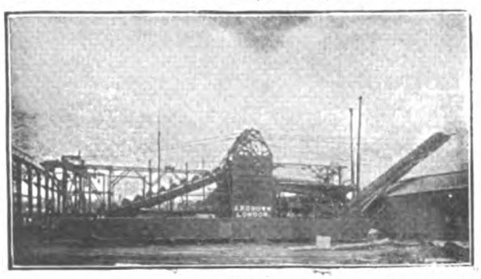

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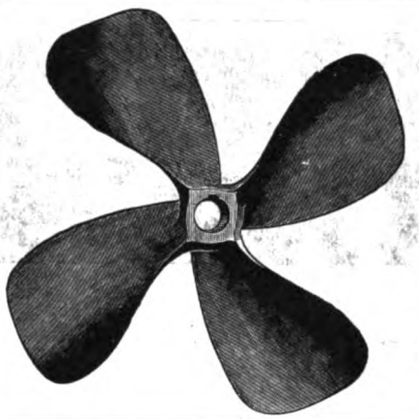

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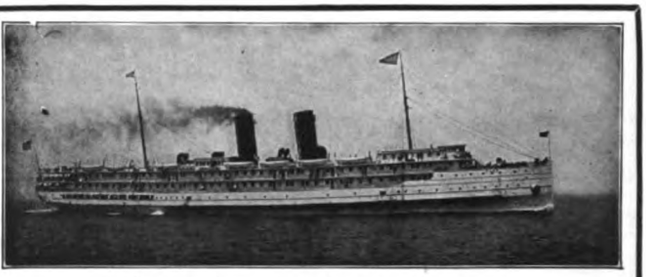
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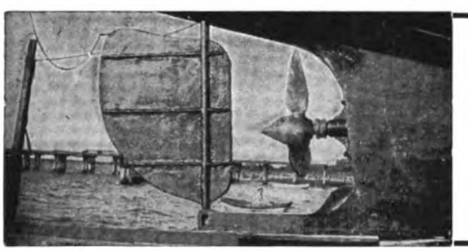

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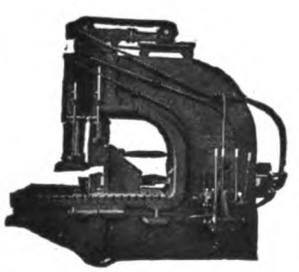

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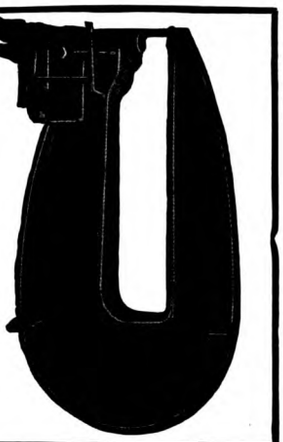

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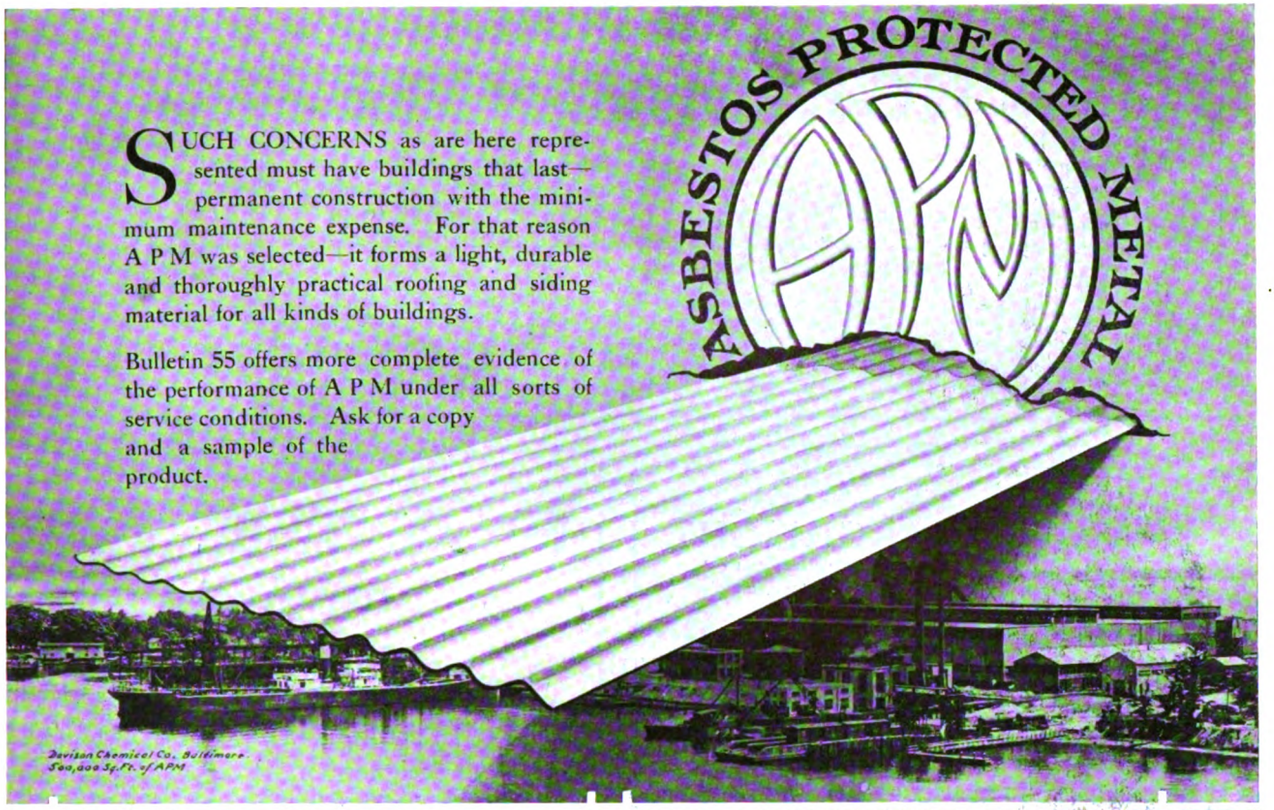
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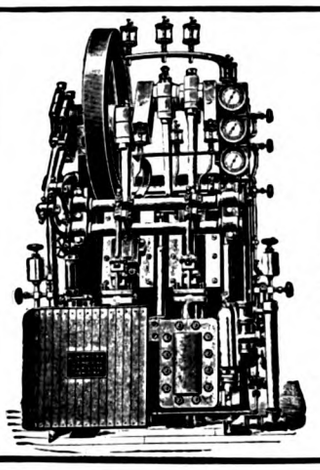

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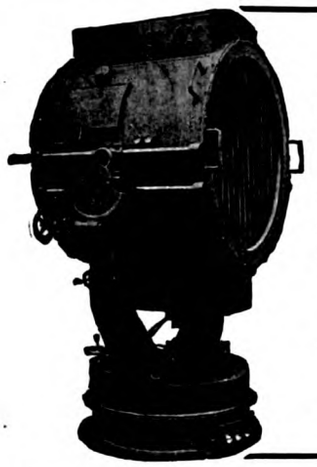

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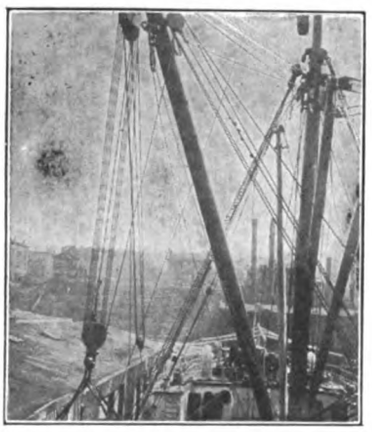

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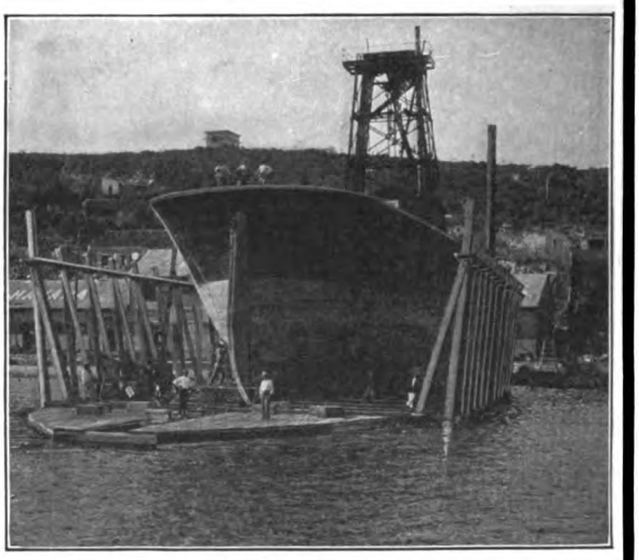

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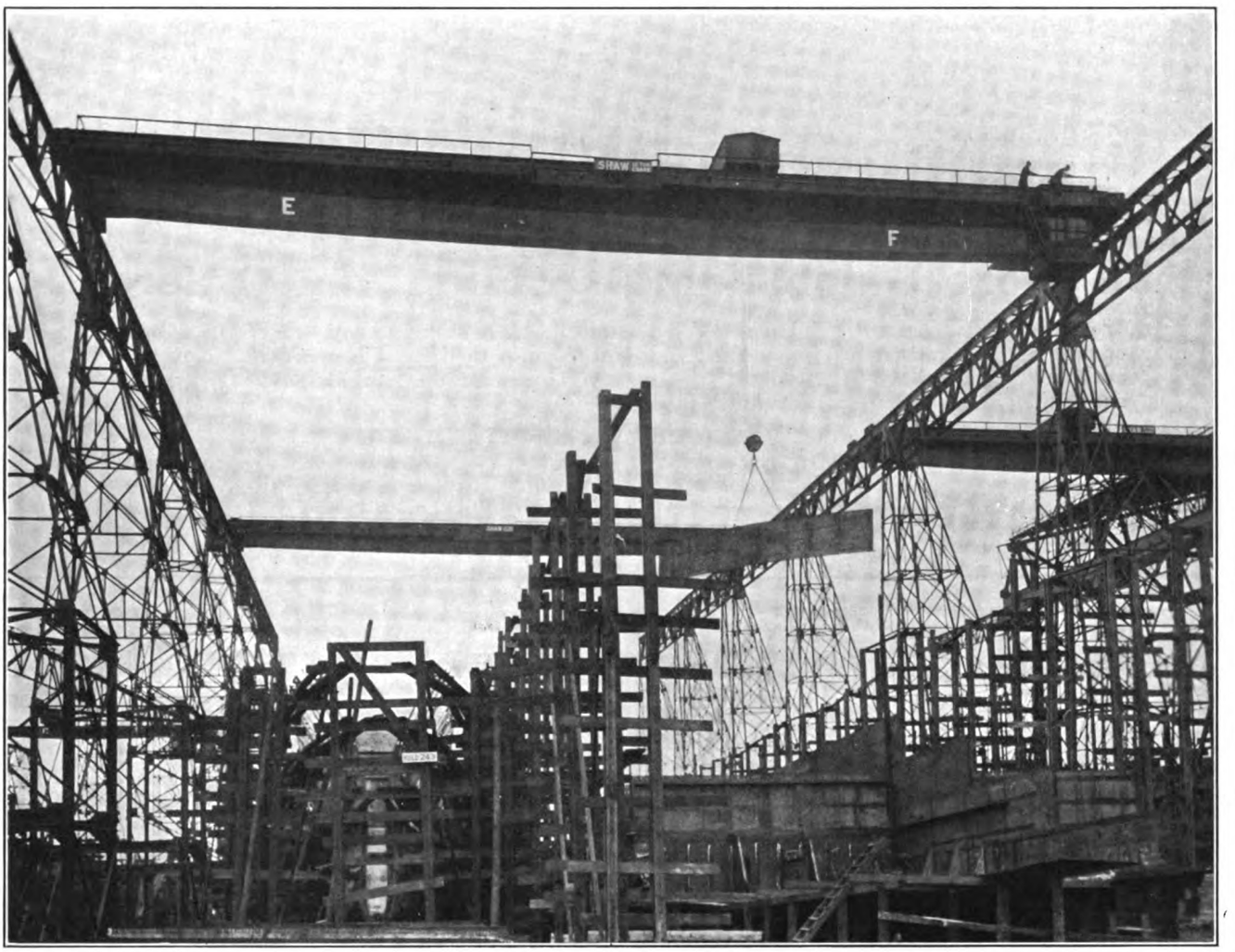

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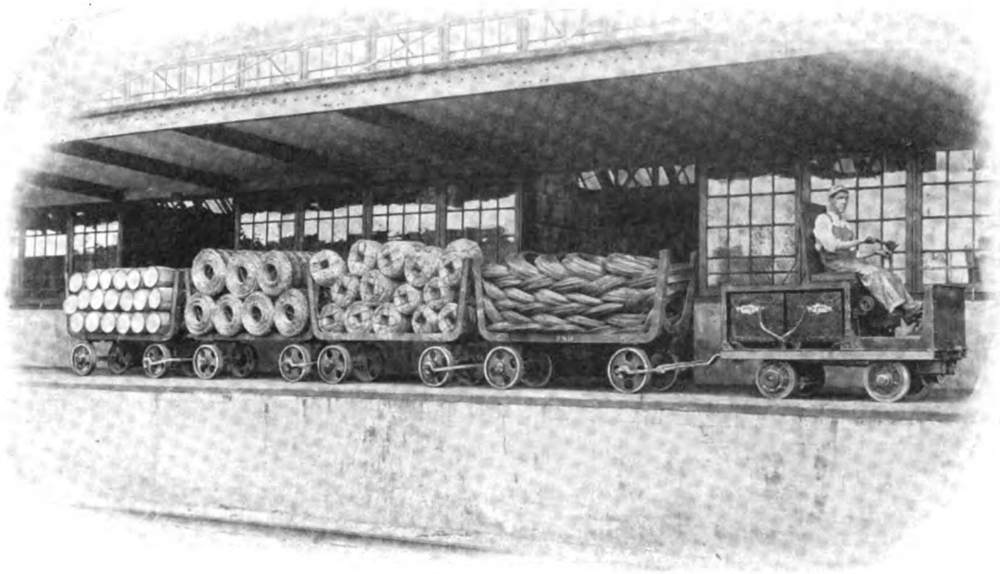

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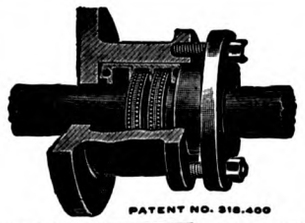

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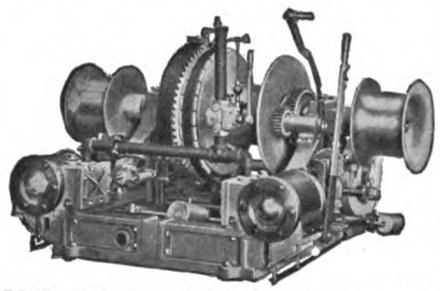

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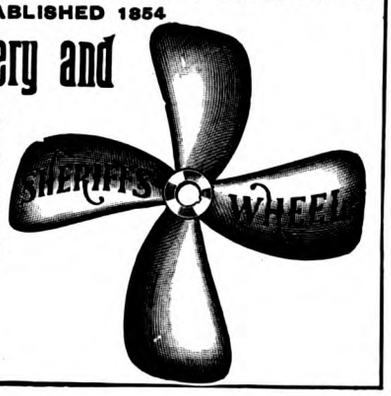

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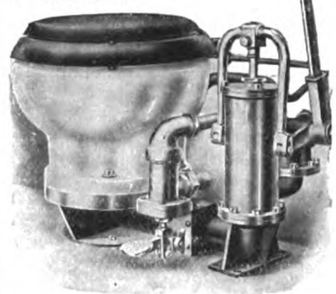

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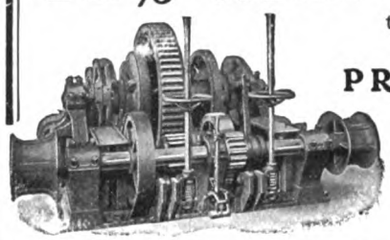

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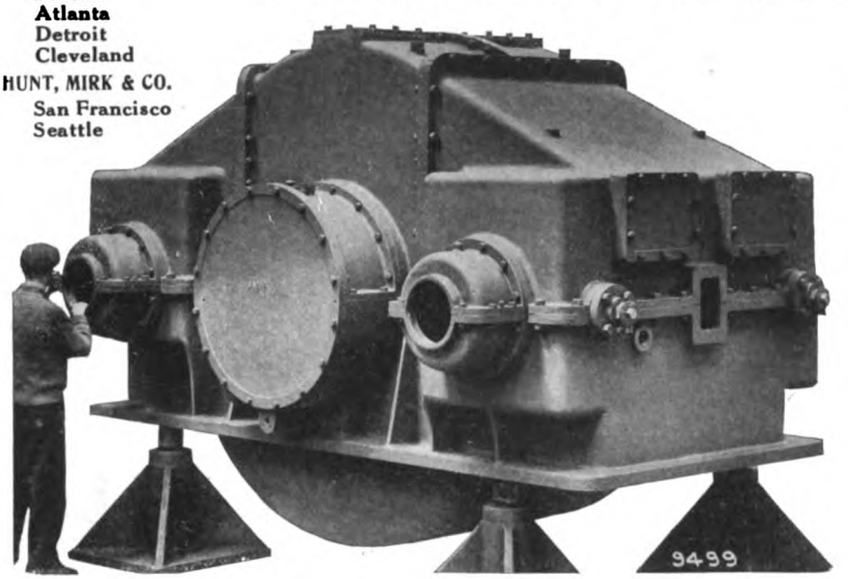

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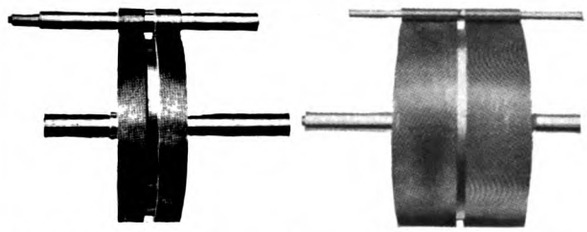

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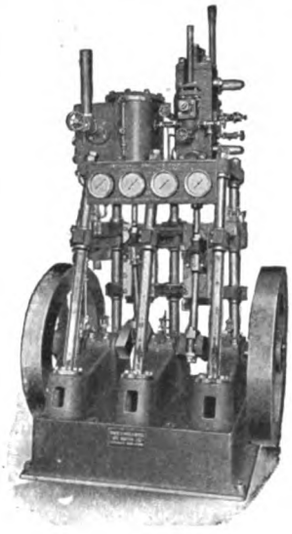

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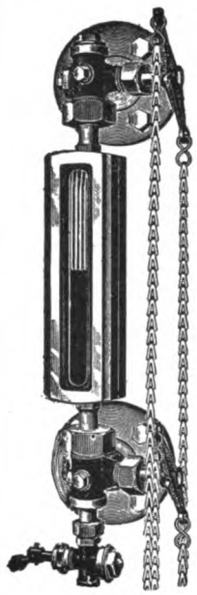

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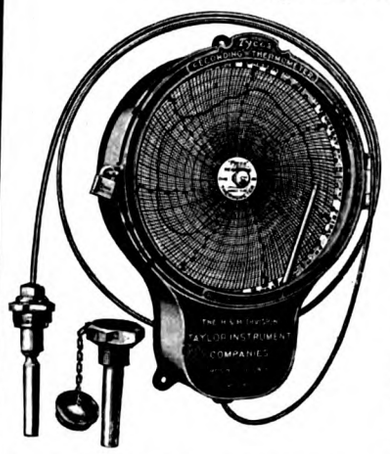

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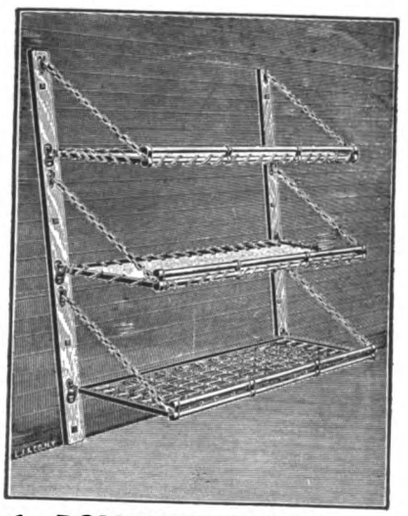

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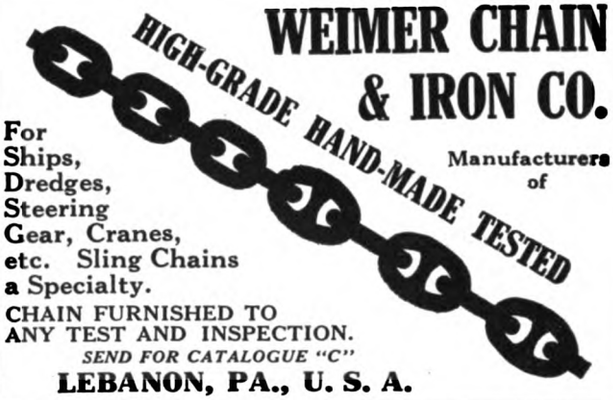

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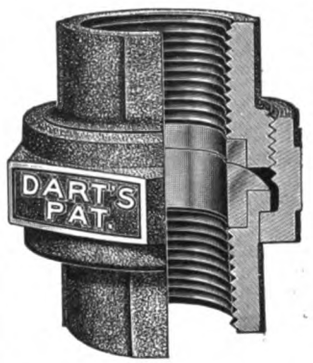

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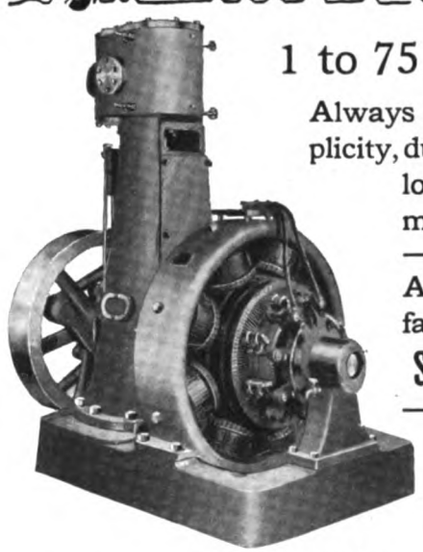

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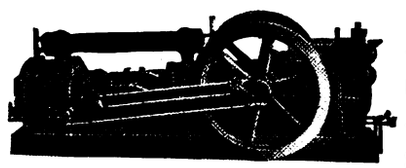

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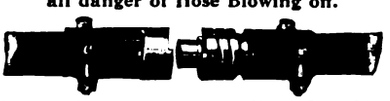
AIR  TIGHT

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For complete information regarding Model 329 Wattmeters, write for Bulletin 2002. Other models in this group are Model 310 Single-Phase and Direct Current Portable Wattmeter, described in Bulletin 2002; Model 370 A.C. and D.C. Portable Ammeter, described in Bulletin 2003; and Model 341 A.C. and D.C. Portable Voltmeter, described in Bulletin 2004.

Weston Portable Instrument Transformers are described in Bulletin No. 2001.

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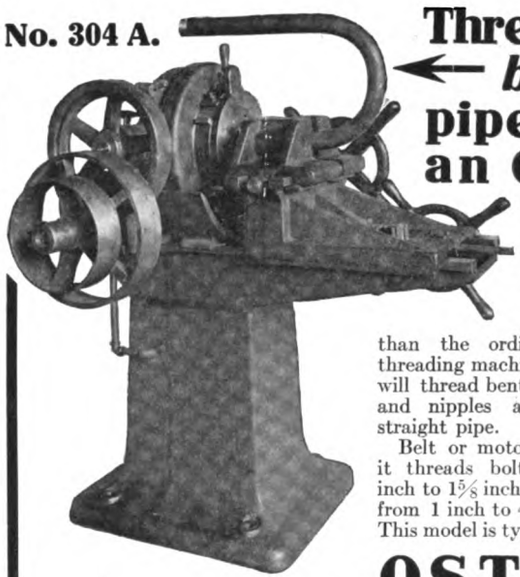

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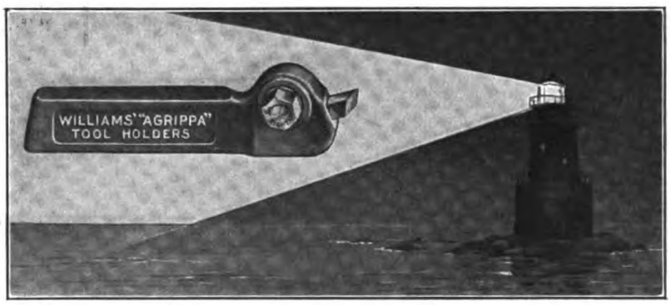

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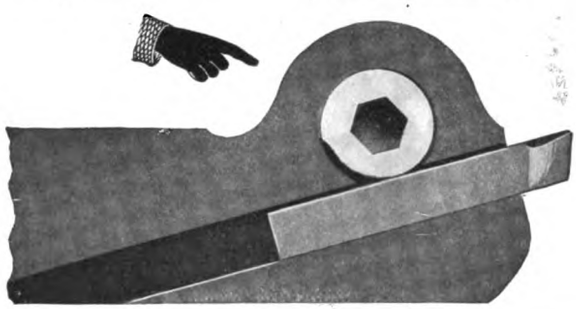

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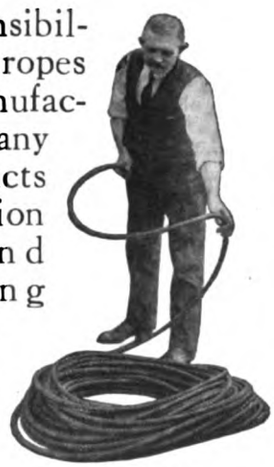

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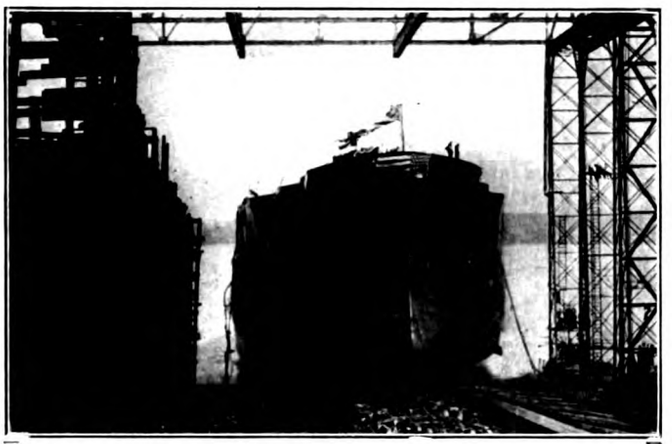

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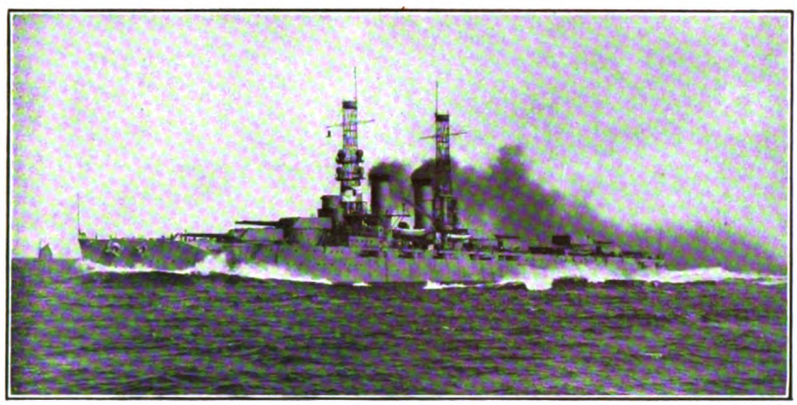

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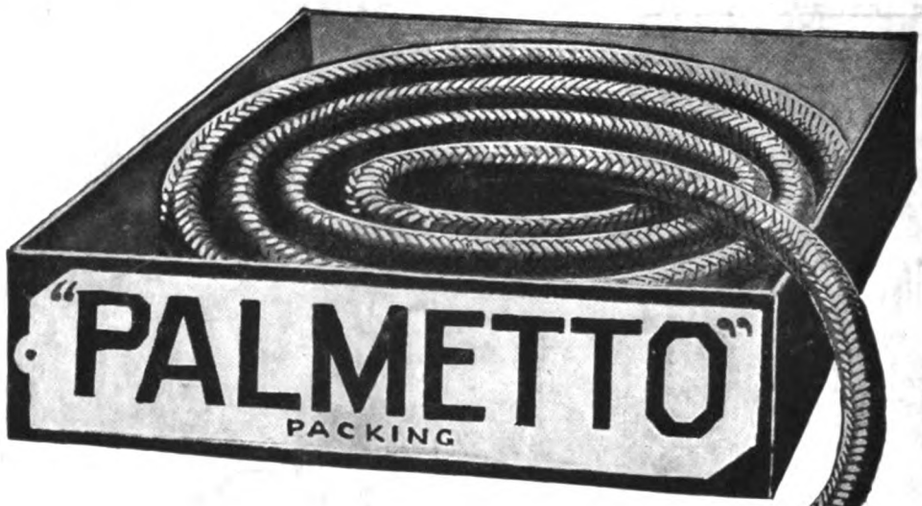

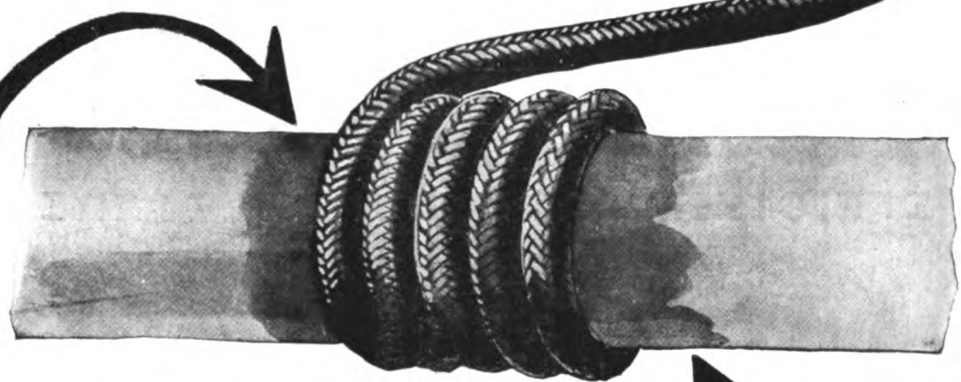

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